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Blackfoot Travel Plan

Final Environmental Impact Statement

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BLACKFOOT TRAVEL PLAN
Final Environmental Impact Statement
Helena National Forest, Lewis & Clark and Powell Counties, Montana

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Cooperating Agencies:	**None**
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Abstract: Land managers for the U. S. Department of Agriculture, Forest Service, Helena National Forest propose to change existing non-winter motorized public access routes and prohibitions for wheeled motorized vehicles on National Forest System land within the Blackfoot travel planning area in the Lincoln Ranger District. Consistent with travel planning regulations at 36 CFR part 212 subpart B, the resulting available public motorized access routes and areas would be designated on a motor vehicle use map (MVUM) and the prohibition at 36 CFR 261.13 would take effect.

Public motor vehicle use on National Forest System routes in the Helena National Forest is presently managed consistent with the current travel management regulations. However, exceptions have been identified based on public input and the criteria listed at 36 CFR 212.55 (2005 Travel Management Rule). The overall objective of this proposal is to provide a manageable system of designated public motorized access routes and areas, consistent with and to achieve the purposes of, Forest Service travel management regulations at 36 CFR part 212 subpart B. We also propose to physically store, decommission, relocate, and construct certain roads and trails as well as to designate a non-motorized trail system.

The preferred alternative (alternative 4) would designate motorized and non-motorized routes for non-winter travel on the Lincoln Ranger District and would result in changes to the existing motorized and non-motorized route system. Some roads and trails are proposed for closure and in this case, the preferred alternative includes proposed levels of closure (storage levels and decommissioning levels, as described in more detail in chapter 2).

Under alternative 4:

- ♦ Approximately 157 miles of roads would no longer be available for public wheeled motorized use (289 miles of National Forest System roads would still be available and shown on the (MVUM))
- ♦ Approximately 7 miles of additional motorized trail would be designated (63 miles of motorized trails would be available)
- ♦ Approximately 59 miles of additional non-motorized trails would be designated, including newly mountain bike trail construction (130 miles for all non-motorized uses would be available)
- ♦ Approximately 4 miles of new motorized trail would be constructed and approximately 9 miles of existing motorized trail would be reconstructed

- Approximately 0.2 miles of new road would be constructed and approximately 0.6 miles of existing road would be reconstructed
- Approximately 21 miles of new non-motorized trail would be constructed (20 miles of this would be for new mountain bike trail construction) and approximately 3 miles of existing non-motorized trail would be reconstructed
- Of the original 92 miles of road acquired via land purchase between 2006 and 2011, approximately 57 miles would be identified for storage or decommissioning
- Of the approximately 60 miles of existing unclassified routes in the planning area, approximately 53 miles would be identified for closure or decommissioning
- Approximately 82 miles of road would be stored (table 4)
- Approximately 212 miles of road would be decommissioned (table 4)
- Seven trailheads and two parking areas would be designated

Implementing this preferred travel plan alternative would require two programmatic amendments to the Helena National Forest Plan. One amendment addresses big game security index. Alternative B is the preferred programmatic plan amendment for big game security index and would establish a new standard for elk security for those herd units within the planning area. This is discussed in more detail in chapter 2 and appendix F. The other Forest Plan programmatic amendment pertains to trails within Forest Plan Management Area N1 (Research Natural Areas) and Management Area R1 (undeveloped land suited for dispersed recreation). This is discussed further in chapter 2 and appendix I.

We prepared this Final EIS based on public and other agency comments received during the Draft EIS comment periods and additional interdisciplinary team input. It includes the identification of our preferred alternative; a new alternative developed after the public comment period on the Draft EIS. It incorporates suggested corrections and changes made by the public (as summarized at the beginning of chapter 1 and in appendix J) and additional internal discussion among the project interdisciplinary team to achieve a balance between recreational/social resources and natural resource protection.

The 45-day comment period on the travel plan ended on March 11, 2013 and the 90-day comment period on the forest plan amendment for big game security ended on April 25, 2013.

This Final EIS is somewhat different than the March 2014 Final EIS and its associated March 2014 draft decision documents (Records of Decision) that were the subject of the predecisional administrative review process (objection process). We distributed the FEIS and both the draft Blackfoot Travel Plan Record of Decision (ROD) and the draft Big Game Security ROD on March 28, 2014, initiating the respective 45-day and 60-day pre-decisional objection periods. We received 21 objections during the objection period. We held an objection resolution meeting on June 25, 2014 and a second one on December 10, 2014. This Final EIS has been revised since it was released in March 2014 to incorporate direction provided by the July 28, 2014 letter from the Regional Forester regarding resolution of objections and to fix an error in the cataloging of public comments received on the 2013 Draft EIS, captured in appendix J of this Final EIS. A more complete list of changes made to this Final EIS since it was issued in March 2014 is included in chapter 1 of this revised FEIS.

List of Acronyms

BLM	Bureau of Land Management
BNWTP	Blackfoot Non-Winter Travel Plan
CDNST	Continental Divide National Scenic Trail
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
DEIS	Draft Environmental Impact Statement
EIS	Environmental Impact Statement
FEIS	Final Environmental Impact Statement
FP	Forest Plan
FS	Forest Service
FSM	Forest Service Manual
HNF	Helena National Forest
HNFP	Helena National Forest Plan
HUC	Hydrologic Unit Code
LRMP	Land and Resource Management Plan
MFWP	Montana Fish, Wildlife and Parks
MVUM	Motor Vehicle Use Map
NEPA	National Environmental Policy Act
NFS	National Forest System
NHPA	National Historic Preservation Act
NOI	Notice of Intent
NOA	Notice of Availability
OHV	Off-Highway Vehicle
PDC	Project Design Criteria
PDF	Project Design Features
ROD	Record of Decision
SHPO	State Historic Preservation Office
USDA	United States Department of Agriculture
USDI	United States Department of Interior
USFWS	United States Fish and Wildlife Service

Summary of the EIS

Introduction

Land managers for the U. S. Department of Agriculture, Forest Service, Helena National Forest propose to change existing non-winter motorized public access routes and prohibitions for wheeled motorized vehicles on National Forest System land within the Blackfoot travel planning area in the Lincoln Ranger District. Consistent with travel planning regulations at 36 CFR part 212 subpart B, the resulting available public motorized access routes and areas would be designated on a motor vehicle use map (MVUM) and the prohibition at 36 CFR 261.13 would take effect. The MVUM would clearly identify roads and trails and their designated motorized uses for forest visitors. Upon publishing the MVUM, public use of wheeled motorized vehicles other than in accordance with the designations would be prohibited. We also propose to physically store, decommission, relocate, and construct certain roads and trails as well as designate a non-motorized trail system. The area affected includes approximately 238,000 acres of National Forest System lands outside of the Scapegoat Wilderness on the Lincoln Ranger District.This analysis is focused on non-winter use; travel routes over snow are not included and are addressed under the recently completed Blackfoot/North Divide Winter Travel Plan decision.

Project Objectives and Development of the Proposed Action

The overall objective of this proposal is to provide a manageable system of designated public motorized and non-motorized access routes and areas that is consistent with Forest Service travel planning regulations (36 CFR 212 Subpart B), the 2005 Travel Management Final Rule, and Helena National Forest Land and Resource Management Plan as amended (Forest Plan) direction. (*Note: Chapter 1 of this EIS has a detailed discussion of the project objectives and the process to develop the proposed action and alternatives*).

To meet the overall objective, there is a need to:

- Designate public wheeled motorized and non-motorized use for roads and trails.
- Mitigate resource concerns associated with certain routes and uses (resource concerns by route are described in more detail in the project record). For off-road motor vehicle use, the objective is to minimize effects as described at 36 CFR 212.55(b).
- Ensure route system is in compliance with Forest Plan direction and NCDE Access Management Guidelines (evaluated with Moving Windows analysis) for grizzly bear security and habitat within the recovery zone.
- More closely align current science, local conditions and other information with elk security needs that meet the intent of the Forest Plan; ensure Helena Forest Plan (USDA Forest Service 1986, as amended) management direction applicable to big game security is up-to-date and based on the best available information.
- Ensure the route system provides continued access for resource management needs (e.g. vegetation management and fire).
- Ensure the route system minimizes exclusive use from and to private land and mining claims and that all designated routes provide for public access.
- Reduce the complexity of the current Forest visitor’s map.

- Provide for wheeled motorized vehicle travel for camping and parking associated with camping near designated system routes, including roads and trails (unless signed otherwise) as long as no new permanent routes are created by this activity; no damage to existing vegetation, soil, or water resource occurs; travel off-route does not cross streams; and travel off-route does not traverse riparian or wet areas.
- Provide for parking safely next to the side of the road.

We developed the preferred travel plan alternative (alternative 4) to provide, access for recreation, administration, private land and resource use, resource protection, and safety for forest users; to reduce or prevent conflicting uses, and to reduce the complexity of existing district transportation system maps.

We used the following sideboards to develop the preferred travel plan alternative:

- Roads and trails currently designated as closed are not assumed to remain designated as closed.
- Unclassified routes (also known as user-created routes, unauthorized routes; routes currently not part of the road or trail inventory) and motorized routes will be identified on existing condition maps and determined “open motorized,” “open non-motorized,” or “closed.”
- Consider opportunities to reroute segments of designated routes to provide wheeled motorized use and to better protect resource conditions.
- Determine the long-term status of all routes and prescribe closure methods (as site-specific information becomes available) as appropriate, including decommissioning.
- Identify type and season of use (non-winter) for all system roads and trails.
- Identify areas where wheeled motorized use would be appropriate as well as the type of use for each area.
- Clearly identify roads of open public access for the Washington Gulch/Jefferson Gulch Roads as directed by a recent judicial court summary decision.
- Identify opportunities for a broad spectrum of motorized and non-motorized uses.
- Place emphasis on reducing the complexity of visitor maps by reducing the number of different travel restriction types including seasonal restrictions; this will assist in making travel management simple and concise (i.e. current plans have 12-15 different closures); the process needs to be simplified for public understanding and management efficiency.
- Continue to coordinate with the Bureau of Land Management, Montana Department of Natural Resources and Conservation, and private land owners to identify access routes necessary for land management and to reduce or eliminate routes that are not necessary to meet the purpose and need for action or project objectives.
- Incorporate collaborative efforts conducted since 2000 and the detailed information gathered into the alternatives.
- Allow administrative use for management needs and emergency access on open routes, routes closed yearlong and routes closed seasonally.
- If other existing unclassified routes are discovered that are not currently captured in this analysis, these routes would not be identified as National Forest System routes and would

therefore be closed to motorized use and legally unavailable to the public without further NEPA analysis.

We developed the preferred big game security forest plan amendment alternative to address the need to more closely align current science, local conditions,and other information with species' needs that meet the intent of the Forest Plan, and to ensure that the Helena National Forest Plan (1986) management direction applicable to the road and trail system in the Blackfoot travel planning area is current and based on the best available information, particularly related to big game security standards (as described in the list of need statements above).

Public Involvement and Alternative Development

We originally initiated the Blackfoot travel planning process in 2000 as part of a Forestwide effort; we developed a proposed action and asked for public scoping comments. The project was then delayed because in January 2001, the Forest Service and Bureau of Land Management (BLM) issued a joint decision known as the 2001 Tri-State Off-Highway Vehicle (OHV) Decision; this decision prohibited motorized cross-country wheeled-vehicle travel on all NFS and BLM public lands in a three-state area except on designated routes and areas. The decision amended nine Forest Plans, including the Helena National Forest Plan (appendix A).

In 2004, we completed a Forest Roads Analysis report for Maintenance Level 1-5 roads (see glossary).

In 2005, the Forest Service issued new travel planning regulations (the 2005 Travel Management Rule; USDA Forest Service 2005). It addressed national concerns about the effects of unmanaged motorized off-highway vehicles (OHVs).

We reinitiated scoping on a new proposed action in 2010 and issued a Notice of Intent (NOI) to prepare an Environmental Impact Statement in the Federal Register at that time. *(Note: Chapter 1 of this EIS has a detailed discussion on public involvement and the development of Issues).*

We received 336 comment letters in response to this effort. We coded, categorized and analyzed these comments along with the results of continued internal scoping to develop a list of significant issues and alternatives for analysis.

The significant issues identified included:

- Wildlife (Grizzly Bear, Mountain Goat, Elk) Habitat and Security
- Water Quality and Fisheries
- Quality Motorized Trail/Route System
- Quality Non-motorized Trail/Route System
- Continental Divide National Scenic Trail

As described in the Draft Environmental Impact Statement (DEIS), we used these significant issues to develop alternatives to the initial proposed action. Three alternatives (alternative 1- no action; alternative 2 – proposed action; and alternative 3) were analyzed in detail in the DEIS and are described briefly below and in detail in chapter 2.

Implementing this preferred travel plan alternative would require two programmatic plan amendments to the Helena National Forest Plan. One amendment addresses big game security and existing Forest Plan standard 4(a) (USDA Forest Service 1986, as amended, pages II-17 to II-18). Alternative B is the preferred programmatic plan amendment for big game security and would establish a new standard for elk security for those herd units within the planning area. This is discussed in more detail in chapter 2 and appendix F. The other Forest Plan programmatic amendment pertains to trails within Forest Plan Management Area N1 (Research Natural Areas) and R1 (undeveloped land suited for dispersed recreation). This is discussed further in chapter 2 and appendix I.

We published a notice of availability of the DEIS for comment in the Federal Register on January 25, 2013, and a legal notice of the opportunity to comment on the DEIS in the Helena Independent Record February 2, 2013. The document was also posted to the Forest website.

A CD of the DEIS or a link to the DEIS were sent to 575 individuals, groups, agencies and tribes. The 45-day comment period on the travel plan ended on March 11, 2013 and the 90-day comment period on the forest plan amendment for big game security ended on April 25, 2013.

We received approximately 16,941 responses during the 45-day and 90-day public comment periods on the DEIS; approximately16,434 commenters were from The Wilderness Society and submitted an identical form letter, and approximately 507 commenters either submitted different form letters or original comments. As a result of a detailed analysis of all of these comments received, we identified 284 comment letters (some associated with multiple senders) which we coded and categorized. The summary of all comments received and the Forest Service responses can be found in appendix J. As a result of this public input, we have made several adjustments to this FEIS, including the development of a new travel plan alternative (alternative 4 – preferred alternative) and a new big game security forest plan amendment alternative (alternative B – preferred alternative).

The four travel plan alternatives analyzed in detail in this EIS are:

Alternative 1 – No Action (No Change): This alternative would defer implementation of the 2005 Travel Management Rule and would not result in a motor vehicle use map. No changes would be made to the existing system of available public motorized routes and areas within the Blackfoot travel planning area. The Forest Plan would not be amended under alternative 1. All existing standards for management areas N1 and R1 would remain as written as would the existing Forest Plan standard 4(a) for big game security.

Alternative 2 – Proposed Action: This alternative would designate motorized and non-motorized routes for non-winter travel on the Lincoln Ranger District and would result in changes to the existing motorized and non-motorized route system. Some roads and trails are proposed for closure and in this case, the proposed action includes proposed levels of closure (storage levels and decommissioning levels, as described in more detail in chapter 2). Maps of the proposed action are in appendix G of this EIS.

Under alternative 2 – proposed action:

- Approximately 94 miles of roads would no longer be available for public wheeled motorized use (352 miles of National Forest System roads would still be available and shown on the MVUM)
- Approximately 36 additional miles of motorized trails would be designated (92 miles of motorized trails would be available)
- Approximately 49 additional miles of non-motorized trails would be designated including new mountain bike trail construction (120 miles of non-motorized trails would be available)
- Approximately 0.2 mile of road would be constructed

- Approximately 2 miles of new motorized trail would be constructed
- Approximately 31.5 miles of new non-motorized trail would be constructed (31 miles of this would be for new mountain bike trail construction)
- Of the original 92 miles of road acquired through land acquisitionbetween 2006 and 2011, approximately 62 miles would be identified for closure or storage
- Of the approximately 60 miles of unclassified routes in the planning area, approximately 39 miles would be identified for closure, storage or decommissioning
- Approximately 135 miles of roads would be stored (table 4)
- Approximately 8 miles of roads would be decommissioned (table 4)
- Five trailheads and two parking areas would be designated

Under alternative 2, The Forest Plan would be amended. The wording in the Forest Plan would change for management area N1 in order to allow management of a motorized trail within this area. The wording in the Forest Plan would also change for Management Area R1 in order to allow management of a motorized trail within this area.

Alternative 3: This alternative was developed to respond to the following significant issues: wildlife habitat and security, wildlife travel corridors, fisheries and water quality, and quality non-motorized trail system. It takes into account input regarding wildlife security and wildlife habitat improvements, water quality and fish habitat, and enhanced non-motorized recreation opportunities while still providing for a motorized recreational experience both on and off the trail. Like alternative 2– proposed action, alternative 3 would be consistent with travel planning regulations and we would designate the resulting available wheeled motorized access routes and areas on a motor vehicle use map. Maps of alternative 3 are in appendix G of this EIS

If alternative 3 were implemented:

- Approximately 144 miles of roads would no longer be available for public, wheeled motorized use (302 miles of National Forest System roads would still be available and shown on the MVUM)
- Approximately 9 miles of motorized trails would no longer be available for this use (47 miles of motorized trails would be available)
- Approximately 87 miles of additional non-motorized trails would be designated (158 miles would be available)
- Approximately 3 miles of new motorized trail would be constructed
- Approximately 0.2 miles of new road would be constructed and approximately 0.5 miles of road would be reconstructed
- Approximately 31.5 miles of new non-motorized trail would be constructed (31 miles of this would be for new mountain bike trail construction)
    - Of the original 92 miles of roads acquired through land acquisitionbetween 2006 and 2011, approximately 70 miles would be identified for closure, storage or decommissioning
    - Of the approximately 60 miles of unclassified routes in the planning area, approximately 54 miles would be identified for closure, storage or decommissioning

- Approximately 76 miles of road would be stored (table 4)
- Approximately 200 miles of road would be decommissioned (table 4)
- Approximately five trailaheads and two parking areas would be designated

Under alternative 3, the Forest Plan would be amended. The wording in the Forest Plan would change for management area N1 in order to allow management of a non-motorized trail within this area. The Forest Plan would not need to be amended for management area R1 under alternative 3.

Alternative 4-Preferred Alternative: This alternative was developed to incorporate suggested corrections and changes submitted by the public in response to the DEIS (as summarized at the beginning of chapter 1 and in appendix I) as well as additional discussion from the project interdisciplinary team to achieve a balance between recreational/social resources and natural resource protection.

Under alternative 4:

- Approximately 157 miles of road would no longer be available for public, wheeled motorized use (289 miles of National Forest System roads would still be available and shown on the MVUM)
- Approximately 7 miles of additional motorized trail would be designated (63 miles of motorized trails would be available)
- Approximately 59 miles of additional non-motorized trails would be designated, including new mountain bike trail construction (130 miles would be available)
- Approximately 4 miles of new motorized trail would be constructed and approximately 9 miles of existing motorized trail would be reconstructed
- Approximately 0.2 miles of new road would be constructed and approximately 0.6 miles of existing road would be reconstructed
- Approximately 21 miles of new non-motorized trail would be constructed (20 miles of this would be for new mountain bike trail construction) and approximately 3 miles of existing non-motorized trail would be reconstructed
- Of the original 92 miles of road acquired through land acquisitionbetween 2006 and 2011, approximately 57 miles would be identified for storage or decommissioning
- Of the approximately 60 miles of unclassified routes in the planning area, approximately 53 miles would be identified for closure or decommissioning
- Approximately 82 miles of road would be stored (table 4)
- Approximately 212 miles of road would be decommissioned (table 4).
- Seven trailheads and two parking areas would be designated

Under alternative 4, the Forest Plan would be amended. The wording in the Forest Plan would change for Management Area N1 in order to allow management of a non-motorized trail within this area. The wording in the Forest Plan would also change for Management Area R1 in order to allow management of a motorized trail within this area.

The two big game security Forest Plan amendment alternatives analyzed in detail in this EIS are:

Alternative A – No Action: This alternative would retain the existing Big Game Security Forest Plan Standard. In this case, ‘no action’ means that we would not amend the Forest Plan, and the existing Forest Plan Forestwide Standard 4(a) for Big Game Security would not be changed.

Alternative B – Preferred Alternative: This alternative was designed to address size of security blocks, effects of archery season on elk security, best science and local knowledge, and issues identified during scoping and the DEIS comment period. It also expands consideration to all open motorized routes (whereas alternative A only applies to roads). Alternative B would replace the existing Forest Plan Big Game Standard 4(a). This change would be documented in a programmatic amendment to the Forest Plan and would apply only to National Forest System lands within those portions of an elk herd unit that are within the Lincoln Ranger District, Helena National Forest administrative boundary; it would not apply to other portions of the Helena National Forest.

Consideration of Objections

We distributed the FEIS and both the draft Blackfoot Travel Plan Record of Decision (ROD) and the draft Big Game Security ROD on March 28, 2014, initiating the respective 45-day and 60-day pre-decisional objection periods. The Blackfoot Travel Plan draft ROD identified Travel Plan alternative 4 as the selected alternative for implementation and the Big Game Security draft ROD identified Big Game Security Forest Plan Amendment alternative B as the selected alternative.

We received 21 objections during the objection period. We held an objection resolution meeting on June 25, 2014 and a second one on December 10, 2014. We have revised this Blackfoot Travel Plan FEIS since it was released in March 2014 to incorporate direction provided by the July 28, 2014 letter from the Regional Forester and to fix an error in the cataloging of public comments received on the DEIS, captured in appendix J. A more complete list of changes made to the FEIS since it was issued in March 2014 is included in chapter 1 of the revised FEIS.

Responsible Official and Decision to be Made

The responsible official for the Blackfoot Travel Plan is the Forest Supervisor for the Helena National Forest. Based upon the effects of the travel plan alternatives, he will decide whether to implement the preferred alternative, the no action alternative, alternative 2, alternative 3, or a combination of the analyzed alternative components considered in this document. Part of this decision will also include whether to programmatically amend the Forest Plan for management area R1 and N1. He will also decide whether to implement the programmatic big game security forest plan amendment preferred alternative or the programmatic big game security forest plan amendment no action alternative. He will consider the comments, disclosures of environmental consequences, and applicable laws, regulations, and policies in making these decisions, stating the rationale in the Records of Decision (RODs).

A travel plan decision and big game security forest plan amendment decision would be made via Records of Decision and would identify which travel plan alternative (1, 2, 3, or 4, or a combination of the components of each) including whether to amend the forest plan for management areas R1 and N1) and which big game security forest plan amendment alternative (A or B) is selected for implementation.

Summary of the Effects of the Alternatives

The effects of the preferred travel plan alternative and the other alternatives analyzed in detail are summarized in **Error! Reference source not found.** that follows. The proposed big game security forest plan amendment alternatives and the proposed forest plan amendment for management areas N1 and R1 are also included within this table. Detailed discussions by resource area are found in chapter 3.

Table S- 1. Travel Plan alternative comparison by purpose and need, primary components and significant issues

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Achievement of Objectives and Purpose and Need				
Provide manageable system of designated public motorized and non-motorized access routes and areas	Alternative 1would continue to provide a manageable route system and access to the national forest. It would, however, leave a number of miles of road on the ground not considered necessary for the management of the national forest.	Alternatives 2, 3 and 4 provide a manageable system of designated public motorized access routes and provide detailed analysis of every road and trail on the system to determine effective management of that road and trail (route).		
Designate public wheeled motorized and non-motorized use for roads and trails	Retains existing system of roads and trails, and would not result in a motor vehicle use map. Occasional administrative use would continue to be allowed on open routes, routes closed yearlong and routes closed seasonally	Alternatives 2, 3 and 4 designate public wheeled motorized and non-motorized use for roads and trails. An MVUM would be created for all designated motorized routes. Non-motorized routes would be shown on the Forest Visitor Map. Would continue to allow occasional administrative use on open routes, routes closed yearlong and routes closed seasonally.		
Mitigate resource concerns associated with certain routes and uses	The current transportation system would remain with 446 miles of designated NFS roads and 56 miles of motorized trail for a total of 502 motorized route miles; no specific mitigations would be applied except on a case-by-case basis. Standard operating procedures and best management practices would continue to be applied where appropriate during routine maintenance activities	The designated NFS route system (roads and motorized trails combined) would be reduced by 58 miles or 12%. Project design features and best management practices would be implemented for alternative 2. Because there would be fewer designated motorized routes under alternatives 2 than under alternative 1, this reduction in route density would also aid in mitigating resource concerns with those routes that are closed, stored or decommissioned.	The designated NFS route system (roads and motorized trails combined) would be reduced by 153 miles or 30%. Project design features and best management practices would be implemented for alternative 3. Because there would be fewer designated motorized routes under alternative 3 than under alternatives 1 or 2, this alternative and alternative 4 goes the furthest in reducing route density and mitigating resource concerns with those routes that are closed, stored or decommissioned. Because alternative 3 would	The designated NFS route system would be reduced by 150 miles or 30%. Project design features and best management practices would be implemented for alternative 4. Because there would be fewer designated motorized routes under alternative 4 than under alternatives 1 or 2, this alternative and alternative 3 go the furthest in reducing road density and mitigating resource concerns with those routes that are closed, stored or decommissioned. Because alternative 4 would have the fewest roads

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
		This reduction in route density would also result in a reduction in off-route travel within 300 feet of a designated route because there would be fewer designated routes from which this would be allowed. See project design features section in chapter 2.	have the fewest motorized trails designated (compared to alternatives 1, 2 or 4), it would result in improved mitigation for resource concerns associated with these closed routes. This reduction in route density would also result in a reduction in off-route travel within 300 feet of a designated route because there would be fewer designated routes from which this would be allowed.	designated (compared to alternatives 1, 2 or 4), it would result in improved mitigation for resource concerns associated with these closed roads. This reduction in route density would also result in a reduction in off-route travel within 300 feet of a designated route because there would be fewer designated routes from which this would be allowed.
Ensure route system is in compliance with Forest Plan direction and NCDE Access Management Guidelines (evaluated with Moving Windows analysis) for grizzly bear security and habitat within the recovery zone	Open road densities were analyzed under each alternative for Forest Plan consistency for this project. The FP standard threshold of 0.55 miles per square mile is met under all alternatives. A moving windows analysis was also conducted for the three grizzly bear subunits for consistency with the NCDE Access Management Guidelines for open and total motorized routes densities and security core habitat. The Access Management Guidelines are not fully met under any of the alternatives although Alts 3 and 4 would result in considerable improvement. See Grizzly Bear in the Significant Issues section of this table for more details.			
More closely align current science, local conditions and other information with elk security needs that meet the intent of the Forest Plan; ensure Helena Forest Plan (USDA Forest Service 1986, as amended) management direction applicable to big game security is up-to-date and based on the best available information.	The big game security Forest Plan programmatic amendment alternative B (preferred alternative) was developed to address more recent science, local conditions, and other information and therefore addresses this need. While the existing condition in terms of travel planning would remain unchanged in the Travel Plan alternative 1, the method by which big game security during the hunting season would be measured would be based on that	If Forest Plan amendment alternative B (preferred alternative) is implemented with one of the travel plan action alternatives (alternative 2, 3 or 4), this need would be met because the preferred amendment alternative was developed based on local conditions, continued collaboration with MFWP biologists, and the best available science related to big game security. If Forest Plan amendment alternative A (no action) is implemented with one of the travel plan action alternatives, this need would not be met.		

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	associated with Forest Plan programmatic amendment alternative B, if selected.			
Ensure the route system provides continued access for resource management needs	Provides for adequate future resource management on the existing road system.	Provides for adequate future resource management on higher maintenance level roads. Segments of new construction are proposed where considered necessary to improve management of the national forest.		
Ensure the route system minimizes exclusive use from and to private land and mining claims and that all routes provide for public access wherever possible.	Does not address this: exclusive use would continue in some areas	Roads that fail to provide public access due to jurisdictional concerns are proposed for storage (approximately 8 miles). Placing the roads in storage would prevent certain user groups (private land owners and miners) from having access to the forest that is not given to the public, while retaining those roads for future resource management needs.		
Reduce the complexity of the current travel map (Forest Visitor Map)	The 12 different seasonal closure codes would remain and therefore map complexity would not change. The current ambiguity resulting from the lack of clearly designating motorized trails as open to two-wheel motorized or motorized 50 inches or less in width would remain. All non-motorized trails would remain open to foot, stock, and mountain bike traffic with no exceptions. A motor vehicle use map (MVUM) would not be produced under alternative 1; a Forest Visitor Map would continue to be used if alternative 1 is selected for implementation, and would continue to be updated as needed.	Alternative 2 would clearly show the trails and roads open to motorized use on a MVUM and more specifically, the type and season of allowable motorized use. There would be nine different closure codes for alternative 2, reducing the number of closure categories and simplifying ease of use. There would also be fewer miles of open road, resulting in an easier to read map. An MVUM that clearly shows open motorized routes would be produced to supplement the information available on the Forest Visitor Map. Designating motorized roads and trails on an MVUM would remove speculation by the public as to the allowable use, and dates of open use.	Alternative 3 would clearly show the trails and roads open to motorized use on a MVUM and more specifically, the type and season of allowable motorized use. There would be five different closure codes for alternative 3, substantially reducing the number of closure categories and simplying ease of use. This alternative would go the furthest in reducing map complexity. An MVUM that clearly shows open motorized routes would be produced to supplement the information available on the Forest Visitor Map. There would also be fewer miles of open road, resulting in an easier to read map. Designating motorized roads and trails on an MVUM would remove speculation by the	Alternative 4 would clearly show the trails and roads open to motorized use on a MVUM and more specifically, the type and season of allowable motorized use. There would be 10 different closure codes for alternative 4, somewhat simplying ease of use but not as much as alternative 2 or 3. An MVUM that clearly shows open motorized routes would be produced to supplement the information available on the Forest Visitor Map. There would also be fewer miles of open road, resulting in an easier to read map. Designating motorized roads and trails on an MVUM would remove speculation by the public as to the

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
		The Forest Visitor Map showing designated non-motorized trails would be updated to reflect the allowable non-motorized uses of the trails, and this would be more detailed under alternatives 2, 3 and 4 than under alternative 1.	public as to the allowable use, and dates of open use. The Forest Visitor Map showing designated non-motorized trails would be updated to reflect the allowable non-motorized uses of the trails and this would be more detailed under alternatives 2, 3 and 4 than under alternative 1.	allowable use, and dates of open use Compared to alternatives 2 and 3, motorized trails would be managed with 2 additional closure dates. The Forest Visitor Map showing designated non-motorized trails would be updated to reflect the allowable non-motorized uses of the trails and this would be more detailed under alternatives 2, 3 and 4 than under alternative 1.
Provide for wheeled motor vehicle travel for camping and parking associated with camping near designated system routes.	The 2001 Tri-State OHV Decision allowed off-route vehicle camping within 300 feet of roads and trails; but, required visitors to select camp sites by non-motorized means and access these campsites by the most direct route causing the least damage. These uses would continue to be allowed under alternative 1	Alternatives 2, 3 and 4 would allow wheeled motorized vehicle travel for camping and parking associated with camping within 300 feet of designated motorized system routes, including roads and trails (unless signed otherwise or specifically closed) as long as: • No new permanent routes are created by this activity • No damage to existing vegetation, soil, or water resources occurs • Travel off-route does not cross streams • Travel off-route does not traverse riparian or wet areas • Recreationalists must use the most direct route to disperse camp • Recreationalists must select their site by non-motorized means		
Provide for parking safely next to the side of the road	All alternatives would provide for legal parking within 30 feet from the edge of the designated motorized route surface. Parking next to the route means a person could still have a picnic, set up a campsite, ride their bicycle, hike, or do any other legal activity.			
Primary Alternative Components[1]				
Miles of designated NFS roads (that would be shown on the MVUM (under alternative 2, 3 or 4)	446 (would be shown on a Forest Visitor map)	352	302	289
Miles of designated motorized trails	56	92	47	63

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Miles of designated non-motorized trails (all categories combined, including mountain bike trails)	71	120	158	130
Miles of road storage	0	135	76	82
Miles of road decommissioning	0	8	200	212
Miles of new road construction	0	0.2	0.2	0.2
Miles of road reconstruction/relocation	0	0	0.5	0.6
Miles of existing unclassified routes that would be closed, stored or decommissioned (approximately 60 miles exist now)	0	39	54	53
Miles of new motorized trail construction	0	2	3	4
Miles of motorized trail relocation/reconstruction	0	0	0	9
Miles of new non-motorized trail construction (this is primarily for new mountain bike trail construction)	0	31.5	31.5	21
Miles of non-motorized reconstruction	0	0	0	3
Total Miles of designated mountain bike routes: Mountain bike and foot travel (hiking) Mountain bike, foot travel and horseback riding Mountain bike, foot travel, horseback riding and	0 0 0 0 0 0	90 19 20 38 1 11	90 18 53 8 1 10	79 18 27 23 1 9

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
motorized trail Mountain bike, foot travel, and motorized trail Mixed use along existing road				
Changes to CDNST, trail #440 (approximate length is 50 miles)	No change; mix of motorized and non-motorized use.	No change; mix of motorized and non-motorized use.	Managed primarily for non-motorized use; seasonal motorized use (closed 9/1-6/30) would be limited to approximately 1 mile of trail and the rest of the trail would be managed for non-motorized use.	Managed primarily for non-motorized use; approximately 3 miles of non-motorized trail would be reconstructed and approximately 1 mile of trail would be managed for seasonal motorized use (closed 10/15-6/30); overall trail length would increase by approximately 1 mile due to reconstructed trail sections
Changes to Helmville-Gould Trail, trail #467 (approximate length is 14 miles)	No change; motorized use (vehicles 50 inches or less); no seasonal restrictions.	No change; motorized use (vehicles 50 inches or less); no seasonal restrictions.	Managed for non-motorized use from its intersection with CDNST to Dalton Mountain.	Motorized use; approximately 5 miles of motorized trail would be reconstructed; overall trail length would increase by approximately 1 mile due to reconstructed trail sections
Changes to Stonewall Trail, trail #417 (approximate length is 5 miles)	No change; motorized use (vehicles 50 inches or less); no seasonal restrictions.	No change; motorized use (vehicles 50 inches or less); no seasonal restrictions.	Closed to wheeled motorized use from 9/1-6/30 annually.	Seasonal motorized use for vehicles 50 inches or less (closed 10/15-6/30); approximately 3 miles of motorized trail would be reconstructed; overall trail length would increase by approximately 1 mile due to reconstructed trail sections
Number of trailheads and parking areas designated	0	5 trailheads 2 parking areas	5 trailheads 2 parking areas	In addition to those included in alternatives 2 and 3, two additional trailheads would be designated. Total: 7 trailheads 2 parking areas

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Forest Plan Amendment for Management Area N1 (Granite Butte proposed research natural area) and R1 (Nevada Mountain)	The Forest Plan would not be amended under alternative 1. All existing standards for management areas N1 and R1 would remain as written	The wording in the Forest Plan would change for management area N1 in order to allow management of a motorized trail within this area. The wording in the Forest Plan would change for Management Area R1 in order to allow management of a motorized trail within this area. Effects of implementing this amendment to other forest resouces are included in each resource section of chapter 3. If notable changes are expected, they are included in this table.	The wording in the Forest Plan would change for management area N1 in order to allow management of a non-motorized trail within this area. The Forest Plan would not be amended for management area R1 under alternative 3. Effects of implementing this amendment to other forest resouces are included in each resource section of chapter 3. If notable changes are expected, they are included in this table.	The wording in the Forest Plan would change for management area N1 in order to allow management of a non-motorized trail within this area. The wording in the Forest Plan would change for Management Area R1 in order to allow management of a motorized trail within this area. Effects of implementing this amendment to other forest resouces are included in each resource section of chapter 3. If notable changes are expected, they are included in this table.
Significant Issues				
Terrestrial Wildlife (See EIS chapter 3)				
Elk				
Summer range habitat effectiveness (HE) in all eight Elk Herd Units (Arrastra Creek, Beaver Creek, Flesher Pass, Keep Cool, Lander's Fork, Nevada Creek, Ogden Mountain, and Poorman): Habitat effectiveness of 50% is recommended	Currently, two of the eight elk herd units provide 50% or greater summer range habitat effectiveness. For the 8 herd units combined open road density averages 2.45 mi/mi2 resulting in an average HE of 44.4%. Summer range road densities and HE values would remain unchanged under this alternative.	Under alternative 2 open road densities among the eight herd units would decrease in six herd units, remain unchanged in one and increase in one. Correspondingly, HE values would improve in six herd units, remain unchanged in one and decline in one. Similar to alternative 1, only two of eight herd units would	Under alternative 3 open road densities decrease in 6 herd units and remain unchanged in two herd units. Correspondingly, HE values would improve in six herd units and remain unchanged in two. Similar to alternatives 1and 2, only two of eight herd units would provide 50% or greater HE. For all eight herd units combined the average for	Under alternative 4 open road densities among the eight herd units would decrease in five herd units, remain unchanged in two and increase in one. Correspondingly, HE values would improve in 5 herd units, remain unchanged in two and decline in one. Similar to alternatives 1, 2 and 3, only two of eight herd

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
		provide 50% or greater HE. For all eight herd units combined the average for summer open road densities would decline slightly to 2.3 mi/mi2 and the average HE values would improve to 46%.	summer open road densities would be reduced the most under this alternative to 2.3 mi/mi2 resulting in the highest average HE value of 46.5%.	units would provide 50% or greater HE. For all eight herd units combined the average for summer open road densities would decline slightly to 2.33 mi/mi2 and the average HE values would improve to 45.6%. Overall, in comparison to the existing condition alternative 4 would result the least improvement to summer range open road density
Forest Plan Standard 4(a) Hiding cover/Open road density (miles/square mile) during big game hunting season (10/15 – 12/1)	Currently, only two of the eight elk herd units meet the hiding cover to open road density ratio during hunting season for Standard 4(a). Six herd units do not meet the minimum hiding cover requirement therefore are not capable of meeting Standard 4(a). Open road densities and hiding cover would remain unchanged under this alternative.	Under alternative 2 those herd units meeting or not meeting standard 4a would remain unchanged. The total average road density for all eight herd units would decline slightly from 1.06 to 1.04 mi/mi2 however, hiding cover values would remain unchanged. Therefore, six of eight herd units would remain incapable of meeting the standard regardless of road densities because the minimum hiding cover requirement for the standard is not met.	Under alternative 3 those herd units meeting the standard would remain unchanged from alternatives 1 and 2. Total road densities would decrease more than alternative 2 (from 1.06 to .91 mi/mi2) however hiding cover values would remain unchanged. Therefore, six herd units would continue to be incapable of meeting the standard regardless of road densities because the minimum hiding cover requirement is not met.	Under alternative 4 those herd units meeting the standard would remain unchanged from alternatives 1, 2, or 3. Total road densities would decrease more than alternatives 2 and 3 (from 1.06 to .86 mi/mi2) however hiding cover values would remain unchanged. Therefore, six herd units would continue to be incapable of meeting the standard regardless of road densities because the minimum hiding cover requirement is not met.
Summer Range Hiding Cover - Forest Plan Standard 3 (maintain 50% hiding cover per elk herd unit, per the Forest Plan)	Forest Plan standard 3 for summer range hiding cover is currently met for three of the eight elk herd units under the current condition; this would not change with implementation of alternative 1. Based on MFWP elk population estimates and trends (FEIS Table 63) resident elk are successfully utilizing the landscape	No notable change in the percent of hiding cover for any of the 8 herd units. In total, 29 acres of hiding cover spacially scattered across three herd units would be affected. Two of the three herd units would continue to meet the FP standard. Two acres (.01%) of hiding cover would be affected in the herd unit not meeting the FP standard. The	Similar to alternative 2. No notable change in the percent of hiding cover for any of the eight herd units. In total, 30 acres of hiding cover spacially scattered across 4 herd units would be affected. Two of the four herd units would continue to meet the FP standard. Three acres of hiding cover would be affected within the two herd units not meeting the FP standard. The	Similar to alternatives 2 and 3. No notable change in the percent of hiding cover for any of the eight herd units. In total, 28 acres of hiding cover spacially scattered across five herd units would be affected. Three of the five herd units would continue to meet the FP standard. Four acres of hiding cover would be affected within the two

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	regardless of current hiding cover conditions supporting the intent of FP Standard 3.	total acres of hiding cover that would be affected is sufficiently small that the percent hiding cover for each of the eight herd units would remain unchanged and consistent with existing condition represented by Alt 1. Of these acres, up to 19 (depending on the alternative) would be removed from herd units currently below standard 3. However, the removal of hiding cover does not change the remaining hiding cover percentages in those herd units currently below the Forest Plan threshold. And, the effect of removing hiding cover for road/trail construction/reconstruction is negligible in terms of changing how elk use the landscape. The proposed construction and reconstruction of trails and roads are primarily in locations already heavily roaded.	total acres of hiding cover that would be affected is sufficiently small that the percent hiding cover for each of the eight herd units would remain unchanged and consistent with existing condition represented by Alt 1. Please see additional language under Alt 2.	herd units not meeting the FP standard.The total acres of hiding cover that would be affected is sufficiently small that the percent hiding cover for each of the eight herd units would remain unchanged and consistent with existing condition represented by Alt 1. Please see additional language under Alt 2.
Elk security: Big game security forest plan amendment alternative A (no change; keep existing Forest plan standard 4(a)) – existing standard is based on the relationship between the amount of hiding cover in an EHU and the open road density during big game rifle season.	Under the existing condition, only 2 of the 8 elk herd units meet the existing Forest Plan standard	Two of the eight elk herd units would continue to meet the existing Forest Plan standard, even with reductions in open road density. Proposed reductions in hunting season road access (with consequent benefits for elk) do not result in any of the sub-standard EHUs moving into compliance with standard 4a. This illustrates the	Two of the eight elk herd units would continue to meet the existing Forest Plan standard, even with reductions in open road density. Proposed reductions in hunting season road access (with consequent benefits for elk) do not result in any of the sub-standard EHUs moving into compliance with standard 4a. This illustrates the concern that	Two of the eight elk herd units would continue to meet the existing Forest Plan standard, even with reductions in open road density. Proposed reductions in hunting season road access (with consequent benefits for elk) do not result in any of the sub-standard EHUs moving into compliance with

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
		concern that the existing big game security index, as currently defined in the Forest Plan, is not a particularly sensitive indicator of changing elk security conditions.	the existing big game security index, as currently defined in the Forest Plan, is not a particularly sensitive indicator of changing elk security conditions.	standard 4a. This illustrates the concern that the existing big game security index, as currently defined in the Forest Plan, is not a particularly sensitive indicator of changing elk security conditions.
Elk Security: Big game security forest plan amendment alternative B (proposed new Forest Plan Standard 4(a) Proposed new standard focuses on the size and distribution of large habitat blocks to which vehicle access is limited and relies less on obtainable levels of hiding cover and FP Standard 3.	As measured according to Forest Plan programmatic amendment alternative B, alternative 1 would result in an average of 48% elk security across that portion of all herd units within the administrative boundary.	Security would increase in six out of the eight elk herd units and would average 51% across all elk herd units combined. This would be an improvement over the existing condition due to road density reductions proposed under alternative 2.	Security would increase in six out of the eight elk herd units and would average 61% across all elk herd units combined. This would be an improvement over the existing condition and alternative 2 due to greater road density reductions proposed under alternative 3.	Security would increase in six out of the eight elk herd units and would average 56% across all elk herd units combined. This would be an improvement over the existing condition and alternative 2 due to greater road density reductions proposed under alternative 4, but would be less of an improvement over that proposed for alternative 3.
Winter Range Thermal Cover - Forest Plan Standard 3 by Elk Herd Unit (maintain 25% thermal cover within elk winter range)	None of the eight herd units meet the FP standard for winter range thermal cover under the existing condition. There would be no change to winter range thermal cover under this alternative. Based on MFWP elk population estimates and trends (FEIS Table 63) resident elk are successfully utilizing the landscape regardless of current thermal cover conditions supporting the intent of FP Standard 3.	Alternative 2 trail construction could potentially impact a total of 5.7 acres of winter range thermal cover within two herd units. In the Beaver creek EHU 0.2 acres could be impacted by motorized trail construction and 1.5 acres by non-motorized trail construction. In the Poorman EHU 3.6 acres could be impacted by non-motorized trail construction. Trails would only be cleared to a width of 8 feet therefore the minimal patch size associated with the linear nature of any disturbance to thermal cover due to trail construction would have insignificant effects upon	Alternative 3 potential impacts to winter range thermal cover are the same as those described for alternative 2, the project will remain consistent with the existing condition represented by Alt 1.	Alternative 4 potential impacts to winter range thermal cover are similar to those described for alternative 2 although total acres of winter range thermal cover that could be impacted would be reduce by 1.5 acres due to less non-motorized trail construction in the Poorman EHU. Based on these findings, the project will remain consistent with the existing condition represented by Alt 1.

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
		wintering elk or the ability of a forest stand to function as thermal cover. Based on these findings, the project will remain consistent with the existing condition represented by Alt 1.		
Grizzly Bear				
NCDE Access Management Guidelines (19/19/68) Open motorized route density (OMRD) guideline is less than or equal to 19% of the area. Total motorized route density (TMRD) guideline is less than or equal to 19 % of the area. Security core (CORE) habitat guideline is greater than or equal to 68% of the area.Open motorized route density (OMRD) guideline is less than or equal to 19% of the area.	Subunit - OMRD/TMRD/CORE Alice creek……….10/18/70 Arrastra creek…….19/21/72 Red Mountain……..26/25/56	Alice creek……….17/13/74 Arrastra creek…….17/18/75 Red Mountain……..24/23/61	Alice creek………..13/9/76 Arrastra creek…….16/17/76 Red Mountain……….21/21/64	Alice creek………..14/9/76 Arrastra creek…….16/17/76 Red Mountain……..20/21/63
Forest Plan standard for open road density in Occupied Habitat Forest Plan Standard is not to exceed 0.55 miles per square mile of road	0.46 mi/mi2 –Guideline is met	0.42 mi/mi2 –Guideline is met	0.36 mi/mi2 –Guideline is met	0.34 mi/mi –Guideline is met
Grizzly Bear Summary – Forest Plan standard and	Open road density in occupied habitat would	Implementing alternative 2 would go further than	Implementing alternative 3 would reduce open road density	Implementing alternative 4 would reduce open road

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
interagency NCDE recovery zone guidelines & potential effects associated with key grizzly bear habitats and season of use	remain at 0.46 miles/square mile and would continue to be in compliance with the Forest Plan standard. For the NCDE access management guidelines (19/19/68 guidelines for OMRD, TMRD, and CORE) the Alice creek subunit meets all three guidelines; the Arrastra creek subunit meets OMRD and CORE, but not TMRD and; the Red Mtn. Subunit is in a degraded baseline not meeting any of the three guidelines.	alternative 1 in meeting the Forest Plan standard and interagency guidelines; it would reduce open road density in occupied habitat by 0.04 miles/square mile. For the NCDE access management guidelines alternative 2 would improve TMRD and CORE in all three subunits and OMRD in two subunits. In the Alice creek subunit OMRD would remain within the guideline, but as is common among the action alternatives, would increase as a result of opening acquired lands to motorized use. Both Alice creek and Arrastra creek subunits would meet all three guidelines under alternative 2. Although OMRD, TMRD, and CORE would all improve in the Red Mtn. subunit none of the guidelines would be met and the subunit would continue to have a degraded baseline.	and would go further than alternatives 1 and 2 in meeting the Forest Plan standard and interagency guidelines; it would reduce open road density by 0.10 miles/square mile. Alternative 3 does more to improve conditions for each of the subunits, individually as well as collectively than alternative 2. Similar to alternative 2, Alice and Arrastra creek subunits would meet all three guidelines but the Red Mtn subunit would continue to exceed all three guidelines. Alternative 3 does the most among the alternatives to limit the season of use, particularly on motorized trails, reducing the duration and distribution of disturbance to bears.	density in occupied habitat and would go further than alternatives 1 and 2 in meeting the Forest Plan standard and interagency guidelines; it would reduce open road density by 0.12 miles/square mile. For open road density for FP occupied habitat and NCDE access management guidelines the values for alternative 4 are very similar to those for alternative 3. The potential to impact bears would be greater under alternative 4 however, due to: the extended duration of use compared to alternative 3 on several motorized routes; improvements to the upper portion of Stonewall trail #417 that would remove whitebark pine and increase the footprint of motorized travel along the ridge and; the development of a connector trail between acquired lands and the Alice creek drainage.
Mountain Goat Motor vehicle use in the Stonewall and Red Mountain areas and the connecting ridgeline for mountain goats	Alternative 1 would not change the existing condition. Alternative 1 allows the longest duration for motorized use to potentially impact goats. Trail #417 would remain open without seasonal restrictions and trail U-330-B1, although closed, would continue to support some	Alternative 2 is not substantially different than alternative 1 and the potential to impact mountain goats would be similar. Trail #417 the supports the greatest use would continue to be managed without seasonal restrictions and U-330-B1 would continue to support	Alternative 3 would do the most to reduce the duration of impacts to goats by seasonally restricting motorized use of trail #417 from 9/1-6/30. Decommissioning trail U-330-B1 from Stonewall Mtn. to Cotter Basin would also reduce unauthorized single track use. Similar to alternative 2, trail	Alternative 4 would provide some benefit to goats by restricting motorized use of trail #417 from 10/15 – 6/30. Compared to alternatives 1 & 2 the duration of impacts would be shorter although motorized use is typically minimal during the restricted period due to weather and

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	limited unauthorized use as a	some unauthorized single track use. Closing trail #485 to single track motorized use would reduce disturbance improve habitat availability in the head of Copper creek drainage. Common to alternatives 2, 3, & 4 future motorized use is anticipated to increase more than it would under alternative 1 due to the development of additional trailheads and connected motorized trail system.	#485 would be non-motorized reducing the area of motorized disturbance to goats.	snow. The alternative 4 seasonal restriction has considerably less benefit to goats than would the shorter season of use under alternative 3. Improvements to upper portion of trail 417 would increase motorized use along the ridge with greater potential to disturb or displace goats than alternatives 1, 2 or 3. The impacts associated with trails U-330-B1 and 485 would be similar to alternative 3. Closing Cotter mine road 330-B1 under alternative 4 may provide some additional benefit to goats although the area receives very limited use by goats.
Threatened, Endangered and Sensitive (TES) Terrestrial Wildlife Species	Likely to adversely affect grizzly bear. May affect, but not likely to adversely affect lynx or lynx critical habitat. No jeopardy to wolverine. May impact individuals of three sensitive species but would not contribute toward a trend for federal listing or a loss of viability (MIIH) determination for all species; would not impact 2 sensitive species	Likely to adversely affect grizzly bear. May affect, but not likely to adversely affect lynx or lynx critical habitat; No jeopardy to wolverine; May impact individuals of four sensitive species but would not contribute toward a trend for federal listing or a loss of viability (MIIH) determination for all species; would not impact 1 sensitive species.	Likely to adversely affect grizzly bear. May affect, but not likely to adversely affect lynx or lynx critical habitat; No jeopardy to wolverine; May impact individuals of four sensitive species but would not contribute toward a trend for federal listing or a loss of viability (MIIH) determination for all species; would not impact 1 sensitive species.	Likely to adversely affect grizzly bear. May affect, but not likely to adversely affect lynx or lynx critical habitat; No jeopardy to wolverine; May impact individuals of four sensitive species but would not contribute toward a trend for federal listing or a loss of viability (MIIH) determination for all species; would not impact 1 sensitive species.
Hydrology & Water Quality and Fisheries (See EIS chapter 3)				
General Hydrology				

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Modeled reduction in sediment delivery from roads to streams (approximately 285 tons/year are currently being delivered to streams)	No change; alternative 1 would not result in a reduction of sediment delivery from roads to streams. Minor improvements could occur over time as part of routine, on-going transportation system maintenance and on a project-by-project basis.	Alternatives 2 would result in an approximate 3-tons/year reduction in sediment delivery from roads to streams due to road storage and decommissioning actions.	Alternative 3 would result in an approximate 6-tons/year reduction in sediment delivery from roads to streams due to road storage and decommissiong actions.	Alternative 4 would provide the greatest opportunity for reduction of sediment delivery from roads to streams. It would result in an approximate 8-tons/year reduction in sediment delivery from roads to streams due to road storage and decommissiong actions.
Number of stream crossings that would be decommissioned and restored (585 stream crossings currently exist)	0	17	128	131
Number of potential culverts removed on storage roads(585 stream crossings currently exist, many of these with culverts)	0	82	49	49
Route miles to be decommssioned within 150 feet of streams (approximately 181 miles of road within 150 feet of streams currently exist)	0	3	34	36
Miles of new motorized route construction or reconstruction within 150 feet of streams	0	0.2	0.7	0.8
Number of new stream crossings associated with new motorized route construction or reconstruction	0	3	3	3
Miles of unclassified routes added to the system within 150 feet of streams (approximately 16 miles of unclassified routes currently	0	13	1	2

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
exist within 150 feet of streams)				
Number of stream crossings on unclassified routes added to the system (53 stream crossings on unclassified routes currently exist)	0	38	6	7
Watersheds containing sediment impaired streams on the Montana 303(d) list	No measurable change; the 11 watersheds containing streams listed by the Montana Department of Environmental Quality (DEQ) as having impaired water quality would not improve and would continue to not fully meet beneficial uses due to sedimentation, among other impairments However, there may be some small improvements in watershed condition across the planning area over time from routine transportation sytem maintenance activiites and expected future project-level stream crossing replacements	4 out of the 11 watersheds containing impaired streams would see reductions in sediment delivery. In addition, 9 out of the 11 watersheds would see other improvements from road decommissioning and stream crossing/culvert removals.	5 out of the 11 watersheds containing impaired streams would see reductions in sediment delivery. In addition, 10 out of the 11 watersheds would see other improvements from road decommissioning and stream crossing/culvert removals.	5 out of the 11 watersheds containing impaired streams would see reductions in sediment delivery. In addition, 10 out of the 11 watersheds would see other improvements from road decommissioning and stream crossing/culvert removals.
Inland Fish Strategy Riparian Habitat Conservation Areas (INFISH RHCAs) – applies to areas west of the Continental Divide in the planning area				
Motorized routes stored or decommissioned in all RHCA categories combined (50 feet to 300 feet on either side of a stream)	0 miles – no reduction in open motorized routes in RHCAs	22 miles or a reduction of approximately 2 percent	40 miles or a reduction of approximately 35 percent	40 miles or a reduction of approximately 35 percent
Stream crossings restored on stored or decommissioned routes in all RHCA categories	0	88	157	157

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
combined (50 feet to 300 feet on either side of a stream)				
New motorized route construction or reconstruction in all RHCA categories combined (50 feet to 300 feet on either side of a stream)	0	0.2	0.8	0.8
Other Water Quality and Fisheries Indicators				
Motorized routes stored or decommissioned (miles) in east-side RHCAs (150 feet from perennial streams) (There are 17 miles of existing open motorized routes in east-side RHCAs)	0	2.4 miles or a 14 percent reduction	3 miles or an 18 percent reduction	3 miles or an 18 percent reduction
Miles of high/moderate risk motorized routes with relationship to fish bearing streams decommissioned	0	18.6	32.4	32.1
Threatened, Endangered and Sensitive Aquatic species	• Likely to adversely affect bull trout and likely to adversely affect bull trout critical habitat • MIIH for western pearlshell mussel and westslope cutthroat trout	• Likely to adversely affect bull trout and likely to adversely affect bull trout critical habitat • MIIH for western pearlshell mussel and westslope cutthroat trout	• Likely to adversely affect bull trout and likely to adversely affect bull trout critical habitat • MIIH for western pearlshell mussel and westslope cutthroat trout	• Likely to adversely affect bull trout and likely to adversely affect bull trout critical habitat • MIIH for western pearlshell mussel and westslope cutthroat trout
Consistency of alternatives with Forest Plan guidance for threatened, endangered and sensitive fish and aquatic species	Alternative 2 will not move the planning area toward desired conditions and is therefore not consistent with the Forest Plan for TES fish and aquatic species. The current road	Alternative 2 is consistent with the Forest Plan for TES fish and aquatic species and would move the planning area toward desired conditions but less so than under	Alternative 3 is consistent with the Forest Plan for TES fish and aquatic species and moves the planning area toward desired conditions. Considering all action alternatives, alternatives	Alternative 4 is consistent with the Forest Plan for TES fish and aquatic species and moves the planning area toward desired conditions. Considering all action

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	system condition and its location have negative impacts to fisheries and aquatic species due to culverts that block fish passage and are at risk or failure, and sedimentation from roads within RHCAs that reduce riparian and floodplain connectivity and function.	alternatives 3 and 4. Alternative 2 would restore riparian areas and stream channels, improving Riparian management objectives (RMOs) and reducing negative impacts to fisheries and aquatic species due to culvert removals that block fish passage and are at risk or failure. Alternative 2 would have only an approximate 2% reduction in open motorized routes in RHCA buffers. Alternative 2 would reduce sedimentation from roads to streams that reduce riparian and floodplain connectivity and function, but would not improve conditions as much as alternative 3 or 4	3 and 4 are very similar in the improvement expected to riparian areas and stream channels, improving RMOs and reducing negative impacts to fisheries and aquatic species due to culvert removals that block fish passage and are at risk or failure. Like alternative 4, alternative 3 would have an approximate 35% reduction in open motorized routes in RHCA buffers,with removal of hundreds of stream crossings and culverts. While there is less than 1 mile or new route constructed planned under alternative 3 and 4, this route construction would be implemented with all project design features and best management practices to ensure any adverse effects are minimized. Approximately 1 mile of unclassified routes would be added to the system in RHCAs and these would also be subject to routine maintenance and best management practices. Over 32 miles of high risk roads would be decommissioned, slightly more than that proposed for alternative 4. Sedimentation to streams would also be reduced (but not as much as it would under alternative 4) and this will improve riparian and floodplain connectivity and function.	alternatives, alternatives 3 and 4 are very similar in the improvement expected to riparian areas and stream channels, improving RMOs and reducing negative impacts to fisheries and aquatic species due to culvert removals that block fish passage and are at risk or failure. Like alternative 3, alternative 3 would have an approximate 35% reduction in open motorized routes in RHCA buffers, with removal of hundreds of stream crossings and culverts. While there is less than 1 mile or new route constructed planned under alternative 3 and 4, this route construction would be implemented with all project design features and best management practices to ensure any adverse effects are minimized. Less than 2 miles of unclassified routes would be added to the system in RHCAs and these would also be subject to routine maintenance and best management practices. Approximately 32 miles of high risk roads would be decommissioned, slightly less than that proposed for alternative 3. Sedimentation to streams would also be reduced and this would be greater than for alternative 3) and this will improve

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
				riparian and floodplain connectivity and function.
Quality motorized trail/route system (See EIS chapter 3 Transportation and Recreation sections)				
Miles of roads and routes open for motorized use and overall extent of the system for motorized users	**446 miles of road** The miles of roads available for public use would remain at 446. This would include a number of routes acquired as part of land exchanges as well as unclassified routes. Many of these roads have been determined to not be necessary for forest management. **56 miles of motorized trail** The miles of motorized trail available for public use would remain at 56 miles.	**352 miles of road** The miles of roads available would drop from 446 to 352 miles for a 94-mile reduction. All routes acquired through land exchange and unclassified routes would be included in the route system, closed or removed from the system. Ninteen miles of roads would be allowed to naturally reclaim. Additionally 8 miles would be decommissioned and 135 miles would be put in storage, which means being treated to ensure they are not causing long- term damage, but left on the landscape for possible future use. **92 miles of motorized trail** Designated motorized trails would increase overall but under alternatives 2, 3, and 4 motorized recreationists would lose some riding opportunities currently available to them. In addition, these alternatives each incorporate restrictions on the season of motorized use on designated motorized trails. These losses and restrictions would be offset to some degree by new motorized trail	**302 miles of road** The miles of roads available would drop from 446 to 302 miles for a 114 mile reduction from the existing condition. All routes acquired through land exchange and unclassified routes would be included in the route system, closed or removed from the system. 76 routes would be placed in storage and 200 miles decommissioned. No roads would be allowed to naturally reclaim under this alternative. This alternative is an improvement over alternative 2 in terms of miles of road left on the landscape but does not go as far as alternative 4. **47 miles of mototized trail** Designated motorized trails would decrease. Under alternatives 2, 3, and 4 motorized recreationists would lose riding opportunities currently available to them. In addition, these alternatives each incorporate restrictions on the season of motorized use on designated motorized trails. These losses and restrictions would be offset to some degree by new motorized trail construction and road to trail	**289 miles of roads** The miles of roads available would drop from 446 to 289 miles for a 157-mile reduction. All routes acquired through land exchange and unclassified routes would be included in the route system, closed or removed from the system. 212 miles would be decommissioned and 82 roads would be placed in storage. Under this alternative there would be no roads allowed to naturally reclaim. This alternative results in the smallest road system of the alternatives. From the transportation perspective, care of this road system would be the least cost to operate. **63 miles of motorized trail** Designated motorized trails would increase but under alternatives 2, 3, and 4 motorized recreationists would lose some riding opportunities currently available to them. In addition, these alternatives each incorporate restrictions on the season of motorized use on designated

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
		construction and road to trail conversions.	conversions. Alternatives 3 and 4 do not provide any single-track opportunities for motorcycles, but motorcycles could continue to use any motorized trail open to vehicles 50 inches or less.	motorized trails. These losses and restrictions would be offset to some degree by new motorized trail construction and road to trail conversions. Alternatives 3 and 4 do not provide any single-track opportunities for motorcycles, but motorcycles could continue to use any trail open to vehicles 50 inches or less.
Miles of roads available for possible motorized, mixed use	Designating NFS roads for motorized mixed use requires an engineering analysis and must be completed by a qualified engineer. Analysis would occur on a road by road basis after completion of the planning process and implemented over time.			
Miles of new motorized trail construction	0	2	3	4
Overall ease-of-use of the motor vehicle use map for motorized users (level of complexity)	See the row 'Reduce the complexity of the current travel map (Forest Visitor Map)' under the section 'Achievement of Objectives and Purpose and Need' previously in this table			
Quality non-motorized trail/route system (See EIS chapter 3 Transportation and Recreation sections)				
Miles of routes open for non-motorized use only overall extent of the system for non-motorized users	71 miles (all mixed non-motorized use).	120 miles of non-motorized use (19 miles foot and mountain bike; 101 miles foot, stock and mountain bike) The additional miles of non-motorized trail would be comprised of segments of previously closed and open roads in addition to some motorized trails.	158 miles of non-motorized trails (42 miles foot and stock; 18 miles foot and mountain bike; 98 miles, foot, stock and mountain bike). This alternative would close Scapegoat Wilderness portal trails to mountain bikers* The additional miles of non-motorized trail would be comprised of segments of previously closed and open roads in addition to some motorized trails.	130 miles of non-motorized trails (21 miles foot and stock; 18 miles foot and mountain bike; 90 miles foot, stock and mountain bike) The additional miles of non-motorized trail would be comprised of segments of previously closed and open roads in addition to some motorized trails.

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Miles of new non-motorized trail construction or miles of new non-motorized routes designated on existing routes	0	31.5	31.5	24
Overall ease-of-use of non-motorized trail system for non-motorized users (level of complexity)	See earlier entry in this table for 'Reduce the complexity of the current travel map (Forest Visitor Map)' under Achievement of Purpose and Need for each alternative			
Continental Divide National Scenic Trail (See EIS chapter 3 section on Recreation)				
Consistency of alternatives with the intent of the 2009 CDNST Comprehensive Plan and the Forest Plan	No change. The CDNST would continue to be a mix of motorized and non-motorized sections. Approximately 25 percent of the trail would be designated for motorized use and approximately 75 percent for non-motorized use. This is somewhat inconsistent with the Comprehensive Plan that encourages non-motorized use. It is also somewhat inconsistent with Forest Plan direction for management area N1 (Research National Areas) because a motorized portion of the CDNST occurs here (see appendix I) but trails are not allowed in this MA.	No change: same as alternative 1	An approximately 1-mile motorized segment would remain open between NFS road 485 and the junction of the Helmville/Gould trail. This segment is on a road that existed prior to November 10, 1978, thus continued motorized use here would be compliant with National CDNST management direction. The remainder of the CDNST would be open to a mix of non-motorized uses depending upon the segment. This is consistent with the Comprehensive plan. Approximately 2 percent of the trail would be designated for motorized use and approximately 98 percent for non-motorized use, a substantial reduction in motorized use compared to alternatives 1 and 2. Because a programmatic forest plan amendment is proposed for Management Area N1 under	An approximately 1- mile motorized segment would remain open between NFS road 485 and the junction of the Helmville/Gould trail. This segment is on a road that existed prior to November 10, 1978, thus continued motorized use here would be compliant with National CDNST management direction. The remainder of the CDNST would be open to a mix of non-motorized uses depending upon the segment. This is consistent with the Comprehensive plan. This would provide motorized access to the east end of trail 467 and the northwest terminus of the Cellar/Ogilvie OHV trail (312) managed by the Helena National Forest . The remainder of the CDNST would be open to foot, stock, and mountain bike traffic including the 3 miles of proposed new

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
			this alternative, alternative 3 would be consistent with the Forest Plan. The amendment would allow the management of a non-motorized segment of the CDNST in this MA	construction that would reroute the trail around private property and move trail users off segments of the CDNST co-located with roads open to highway legal vehicles. Approximately 2 percent of the trail would be designated for motorized use and approximately 98 percent for non-motorized use, a substantial reduction in motorized use compared to alternatives 1 and 2. Because a programmatic forest plan amendment is proposed for Management Area N1 under this alternative, alternative 4 would be consistent with the Forest Plan. The amendment would allow the management of a non-motorized segment of the CDNST in this MA.
Other Resources				
Socioeconomics (See EIS chapter 3)				
Access to suitable timber land	No change	No perceptible change	No perceptible change	No perceptible change
Public access for fuel wood	No change	No measurable change	No measurable change	No measurable change
Approximate overall cost of Implementation (road and trail maintenance,	No change; routine maintenance of current system would continue, no	Least expensive, compared to alternatives 3 and 4;	Most expensive; approximately $2,745,000	Slightly less expensive than alternative 3; approximately

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
construction and reconstruction, decommissioning, storage and noxious weed control	cost associated with new construction, storage or decommissioning; approximately $1,426,000	approximately $2,031,000		$2,690,000
Impact to local economy	No change	At the travel planning area scale, changes in the types and quantity of allowed uses under the travel plan may impact specific vendors or businesses to some degree positively or negatively, but the differences between all alternatives are not great enough that it would be expected to cause a substantial shift from the current existing condition. With all alternatives, the road system would remain at levels that would allow the forest access to most suitable timber lands over the planning horizon, although some variation does exist between alternatives. Public access to firewood is anticipated to remain adequate to meet public demand overall, although there are differences between alternatives in the timing and location of open roads available to collect firewood. Motorized and non-motorized based recreation would continue to greatly contribute to the local economies within the economic impact area and the smaller travel planning area.		
Fire and Fuels (See EIS chapter 3 section on Fire and Fuels)				
Access for wildfire suppression	No change; the current situation allows for pre-positioning of firefighting resources across the roaded areas of the travel planning area	Proposed changes under any alternative would allow for pre-positioning of firefighting resources across the roaded areas of the planning area. With fewer open roads, response time could increase and therefore fire managers would update strategies and tactics to suppress fires in the planning area		
Cultural Resources (See EIS Chapter 3 section on Cultural Resources)	Alternative 1 does not increase protection of cultural resources but does provide access to cultural resources for purposes of monitoring, scientific investigation and potentially interpretation.	Overall, reducing the number of motorized roads and trails available to the public in the travel planning area would benefit cultural resources. Motor vehicle travel restrictions prevent easy public access to archaeological sites and historic ruins that are vulnerable to vandalism, artifact collecting, arson, and other depreciative behavior. Overall, alternative 2 would provide more protection benefit to cultural resources over alternative 1. It would provide a reasonable amount of access for people wishing	Overall, reducing the number of motorized roads and trails available to the public in the travel planning area would benefit cultural resources. Motor vehicle travel restrictions prevent easy public access to archaeological sites and historic ruins that are vulnerable to vandalism, artifact collecting, arson, and other depreciative behavior. Overall, alternative 3 would provide more protection benefit to cultural resources over alternatives 1 and 2 while still providing a reasonable amount of access for people wishing to visit historic ruins.	Overall, reducing the number of motorized roads and trails available to the public in the travel planning area would benefit cultural resources. Motor vehicle travel restrictions prevent easy public access to archaeological sites and historic ruins that are vulnerable to vandalism, artifact collecting, arson, and other depreciative behavior. Overall, alternative 4 would provide more protection benefit to cultural resources over alternatives 1, 2 and 3 while still providing a reasonable amount of

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
		to visit historic ruins.		access for people wishing to visit historic ruins.
Noxious Weeds (See EIS chapter 3)				
Risk of noxious weed introduction and spread by motorized routes	No change	Motorized routes generally increase the spread of weeds. With fewer miles of motorized routes and more miles of non-motorized, stored and decommissioned routes, alternatives 2, 3, and 4 would be expected to reduce the risk of invasive plant species introduction and spread compared to alternative 1. Alternative 4 would result in the fewest acres of weed infestations within 300 feet of motorized routes and alternative 1 would continue to have the highest. All action alternatives would have a lower risk of weed spread than the existing condition.Short-term adverse impacts would be minimized through the implementation of project design features.		
Approximate acres with documented invasive plant presence within 300 feet of motorized routes	6,010	5,830	5,382	5,356
Minerals (See EIS chapter 3)	Alternative 1 is the most favorable for mineral exploration and development activities as it includes the greatest number of open motorized routes.	Alternative 2 is less favorable than alternative 1 but better than alternative 3 because there are fewer miles of route that would be decommissioned. Specific permitted projects are negatively affected by alternatives 2, 3 and 4.	Alternative 3 is less favorable than alternative 2 but better than alternative 4 in the level of restrictions on access to to sites; Specific permitted projects are negatively affected by alternatives 2, 3 and 4.	Alternative 4 restricts the most miles of routes due to decommissioned routes, when compared to alternatives 1, 2 and 3. Specific permitted projects are negatively affected by alternatives 2 and 3.
Soils (See EIS chapter 3)	Alternative 1 has about 224 total miles of routes open to wheeled motorized use on sensitive soils within the Blackfoot Planning area.	Alternative 2 would have about 222 route miles accessible to wheeled motorized use on sensitive soils, 2 miles less than Alternative 1.	Alternative 3 would have about 165 route miles accessible to wheeled motorized use on sensitive soils, 59 miles less than alternative 1.	Alternative 4 would have about 160 route miles accessible to wheeled motorized use on sensitive soils, 64 miles less than alternative 1.
Threatened, Endangered and Sensitive Plants (See EIS chapter 3)	Highest level of Missoula phlox and whitebark pine populations within 300 feet of motorized routes, with potential to be adversely impacted. • There are no federally listed threatened or	No perceptible change in level of Missoula phlox and whitebark pine populations within 300 feet of motorized routes. • MIIH determination for all sensitive species	Reduction in level of Missoula phlox and whitebark pine within 300 feet of motorized routes, reducing the potential for adverse impacts. • MIIH determination for all sensitive species	Reduction in level of Missoula phlox and whitebark pine within 300 feet of motorized routes is the same as alternative 3, reducing the potential for adverse impacts. Under alternative 4,

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	endangered species with potential to occur in the planning area. Determination for all sensitive plant species with potential to occur in planning area: May impact individuals but would not contribute toward a trend for federal listing or a loss of viability (MIIH) determination for all species			approximately 2 acres of Missoula phlox would be within 300 feet of new construction of a non-motorized trail. The new trail would also pass through a whitebark pine stand (#40). There is potential for some removal of white bark pine for proposed trail reconstruction along the CDNST and Stonewall trails; project design features would be applied to ensure adverse impacts are minimized.
Sensitive plant populations within 300 feet of motorized routes (Missoula phlox and white bark pine)	17 acres – Missoula phlox 14 miles – whitebark pine	Slight 0.10-acre reduction for Missoula phlox; no change for whitebark pine	Approximate 2-acre reduction for Missoula phlox and 9-mile reduction for whitebark pine	Same as alternative 3
Inventoried Roadless Areas (see EIS chapter 3)	No change to unroaded character in planning area IRAs or the Specimen Creek unroaded expanse; no effect to overall wilderness attributes 76 miles of motorized routes and 59 miles of non-motorized routes would remain in IRAs and the Specimen Creek unroaded expanse.	Routes open to wheeled motorized vehicles within the IRAs and Specimen Creek unroaded expanse would decrease by approximately 18 miles. The miles of non-motorized routes would increase by about 18 miles. All action alternatives would enhance wilderness attributes of IRAs and Specimen Creek unroaded expanse due to a reduction in miles of motorized use, increase in non-motorized routes and the delineation of routes. By consciously designating these routes, management would	Routes open to wheeled motorized vehicles with the IRAs and unroaded expanse would decrease by approximately 45 miles. The miles of non-motorized routes would increase by about 24 miles. All action alternatives would enhance wilderness attributes of IRAs and Specimen Creek unroaded expanse due to a reduction in miles of motorized use, increase in non-motorized routes and the delineation of routes. By consciously designating these routes, management would improve.	Routes open to wheeled motorized vehicles within the IRAs and unroaded expanse would decrease by approximately 10 miles. The miles of non-motorized trails would increase by about 12 miles. All action alternatives would enhance wilderness attributes of IRAs and Specimen Creek unroaded expanse due to a reduction in miles of motorized use, increase in non-motorized routes and the delineation of routes. By consciously designating these routes,

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
		improve. All action alternatives propose some level of road storage and decommissioning. While this level varies by alternative, these actions would improve the undeveloped character of these IRA's over time. Opportunities for solitude and unconfined primitive recreation would increase with a reduction in motorized use.	The Nevada Mountain roadless area would improve with the the designation of the Helmville-Gould trail as non-motorized. All action alternatives propose some level of road storage and decommissioning. While this level varies by alternative, these actions would improve the undeveloped character of these IRAs over time. Opportunities for solitude and unconfined primitive recreation would increase with a reduction in motorized use	management would improve. . All action alternatives propose some level of road storage and decommissioning. While this level varies by alternative, these actions would improve the undeveloped character of these IRAs over time. Opportunities for solitude and unconfined primitive recreation would increase with a reduction in motorized use.

[1] this is the cumulative outcome of the proposed changes and past decisions

* Closing the portal trails to mountain bikers would reduce conflict among non-motorized user groups and minimize wilderness trespass from wheeled non-motorized recreationists.

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Chapter 1. Purpose of and Need for Action

Document Organization

This final environmental impact statement (FEIS) is prepared according to the format established by Council on Environmental Quality (CEQ) regulations to implement the National Environmental Policy Act (NEPA) found in 40 CFR 1500-1508. This FEIS consists of the following:

- Summary
- Chapter 1. Purpose of and Need for Action: This chapter includes a short introduction, information on the history or background leading up to the proposal, relationship to some of the pertinent laws, a statement of the purpose and need for the proposal, brief description of our proposal, and the key decisions that need to be made.
- Chapter 2. Alternatives, Including the Preferred Alternative: This chapter describes the proposed action and alternatives—including no action—in detail. We developed these alternatives based on significant issues raised by the public and other agencies. We include a summary table at the end of the chapter that reflects how each alternative addresses project objectives and significant issues.
- Chapter 3. Affected Environment and Environmental Consequences: This chapter includes, by resource, a discussion of the affected environment or current situation, and the anticipated environmental consequences of the alternatives. The direct, indirect, and cumulative effects are described and how well each alternative addresses current issues related to the project, the irreversible and irretrievable impacts, and whether actions are consistent with the Helena Forest Plan, and other laws and regulations.
- Chapter 4. List of Preparers: This chapter lists members of the interdisciplinary team (IDT) and others who contributed to this document decision. It also contains a glossary, a list of references used to prepare this document, and outlines the distribution of the DEIS by listing agencies, organizations and individuals who requested to have the document sent to them.
- Appendices: The appendices provide more detailed information pertinent to the decisions to be made that support the analyses presented in this document. They include Appendix A - Forest Plan Direction and Travel Management Criteria for Designation of Roads, Trails and Areas (36 CFR 212.55); Appendix B – Scoping Commenters; Appendix C – Route Details by Alternative; Appendix D – Cumulative Effects—Past, Present And Future Actions; Appendix E – Wildlife – Methodologies And Assumptions; Appendix F – Big Game Security Forest Plan Amendment for Blackfoot Non-Winter Travel Planning; Appendix G –Alternative Maps; Appendix H – best management practices (removed for the FEIS), Appendix I – Forest Plan amendment for R1 and N1 Management Area Direction, and Appendix J – Forest Service Response to Public Comments.

We have used the most current and complete data available. GIS data and product accuracy may vary. For instance, they may be: developed from sources of differing accuracy, accurate only at certain scales, based on modeling or interpretation, incomplete while being created or revised. Due to rounding, acre and mileage totals are approximate. Using the GIS products for purposes other than those for which they were created may yield inaccurate or misleading results. We reserve the right to correct, update, modify, and/or replace GIS products and associated data sources without notification.

Types of Routes and Other Definitions

The following table lists route categories and travel planning definitions applicable to this project based on the definitions in 36 CFR 212-Travel Management. For a total list of terms, please refer to the glossary found in chapter 4 of this document.

Table 1. Road and Trail Terminology - Definitions

Terminology	Definition
Administrative Use	Motorized vehicle use vehicle use associated with management activities or projects on National Forest land administered by the Forest Service or under authorization of the Forest Service. Management activities include but are not limited to: law enforcement, timber harvest, reforestation, cultural treatments, prescribed fire, watershed restoration, wildlife and fish habitat improvement, private land access, allotment management activities, and mineral exploration and development that occur on National Forest land administered by the Forest Service or under authorization of the Forest Service.
Decommissioning	A term used in this document to refer to activities that result in the stabilization and restoration of unneeded roads to a more natural state (36 CFR 212.1) or, Activities that result in restoration of unneeded roads to a more natural state (FSM 7705, FSM 7734). See table 4.
Designated Road or Trail or Area	A National Forest System road, National Forest system trail, or an area on National Forest System lands that is designated for motor vehicle use pursuant to 36 CFR 212.51 on a motor vehicle use map (36 CFR 212.1).
Forest Road or Trail	A road or trail wholly or partially within or adjacent to and serving the NFS that is determined to be necessary for the protection, administration, and utilization of the NFS and the use and development of its resources (36 CFR 212.1)
Forest Transportation System	The system of National Forest System roads (NFSR), National Forest System trails, and airfields on National Forest System lands (36 CFR 212.1).
Motor Vehicle	Any vehicle which is self-propelled, other than: (1) A vehicle operated on rails; and (2) Any wheelchair or mobility device, including one that is battery-powered, that is designed solely for use by a mobility-impaired person for locomotion and that is suitable for use in an indoor pedestrian area (36 CFR 212.1)
Motorized Mixed Use	A term used in this document to refer to designation of a NFS road for use by both highway-legal and non-highway-legal motor vehicles (FSM 7705)
Motorized Use	A term used to refer to travel by any motor vehicle (36 CFR 212.1.36 CFR 261.2, FSM 7705, FSH 2309.18.05); for purposes of this analysis, motorized use is considered use by wheeled motor vehicles (not over-snow vehicles).
Non-motorized Use	A term used in this document to refer to travel other than that defined as motorized. For example, hiking, riding horses or mountain biking.
Off Highway Vehicle (OHV)	Any motor vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain (36 CFR 212.1)
Road	A motor vehicle route over 50 inches wide, unless identified and managed as a trail (36 CFR 212.1).
Route	A road or a trail (FSM7705)
Storage	A term used in this document to refer to roads that are intended to be self-maintaining in a non-use status for up to 20 years, but remain on the National Forest System. This is accomplished through re-contouring or obliterating access points which may include rock or earth barriers, and may include the removal of culverts to restore watercourses to natural channels and floodplains. The remainder of the

Terminology	Definition
	roadbed would remain intact so the road could be easily rebuilt for future use. See table 5.
Trail	A route 50 inches wide or less, or a route over 50 inches wide that is identified and managed as a trail (36 CFR 212.1).
Unclassified Road or Trail	A road or trail that is not a forest road or trail or a temporary road or trail and that is not included on a forest transportation atlas (36 CFR 212.1) In this document, unclassified roads or trails are sometimes referred to as “user-created”, “unauthorized”, “undesignated”, or “non-system” These are older terms that may be found interchangeably throughout specialist reports. Unclassified routes are not included as part of the forest transportation system.

Introduction

Land managers for the U. S. Department of Agriculture, Forest Service, Helena National Forest propose to change existing non-winter designated motorized public access routes and prohibitions for wheeled motorized vehicles on National Forest System land within the Blackfoot travel planning area in the Lincoln Ranger District in Montana (figure 1). The planning area encompasses approximately 238,000 acres of National Forest System (NFS) land outside of the designated Scapegoat Wilderness.

Public motor vehicle use on National Forest System routes presently is managed consistent with the current travel management regulations. Exceptions have been identified based on public input and the criteria listed at 36 CFR 212.55 (2005 Travel Management Rule), therefore changes are proposed. The overall objective is to provide a manageable system of designated public motorized access routes and areas, consistent with and to achieve the purposes of Forest Service travel management regulations at 36 CFR part 212 subpart B.

Consistent with travel management regulations at 36 CFR part 212 subpart B, the resulting available public motorized access routes and areas would be designated on a motor vehicle use map (MVUM) and the prohibition at 36 CFR 261.13 would take effect. The MVUM would clearly identify roads and trails and their designated motorized uses for forest visitors. Upon publishing the MVUM, public use of wheeled motorized vehicles other than in accordance with the designations would be prohibited.

We also propose to physically store, decommission, relocate, and construct certain roads and trails as well as designate a non-motorized trail system.

This FEIS discloses the direct, indirect, and cumulative environmental impacts that would result from implementing the proposed changes (alternative 2-proposed action) and two other action alternatives. Alternative 3 was developed to address issues raised by the public during scoping and continued communication with collaborative groups. Alternative 4 in this FEIS was not included in the DEIS. This alternative was developed after the public comment period on the DEIS. It incorporates suggestions submitted by the public. Alternatives are addressed in detail in chapter 2.

This analysis complies with the National Environmental Policy Act (NEPA) and other relevant federal and state laws and regulations. It is focused on non-winter use; travel routes over snow are not included and are being addressed under the recently completed Blackfoot/North Divide Winter Travel Plan decision. The Helena National Forest Supervisor is the responsible official for this project.

Implementing any of the action alternatives would require programmatic plan amendments to the Helena National Forest Plan. One is regarding the standard for big game security index. This proposed programmatic Forest Plan Big Game Security Amendment would establish a new standard for big game security for those herd units within the planning area. This is discussed in chapter 2 and appendix F. The programmatic Forest Plan Amendment for Management Areas N1 and R1 would address trails within management areas N1 (Research Natural Areas) and R1 (undeveloped land suited for dispersed recreation). This is discussed in chapter2 and appendix I.

Table 1 and the glossary (p. 570) provide definitions of many of the terms in this document.

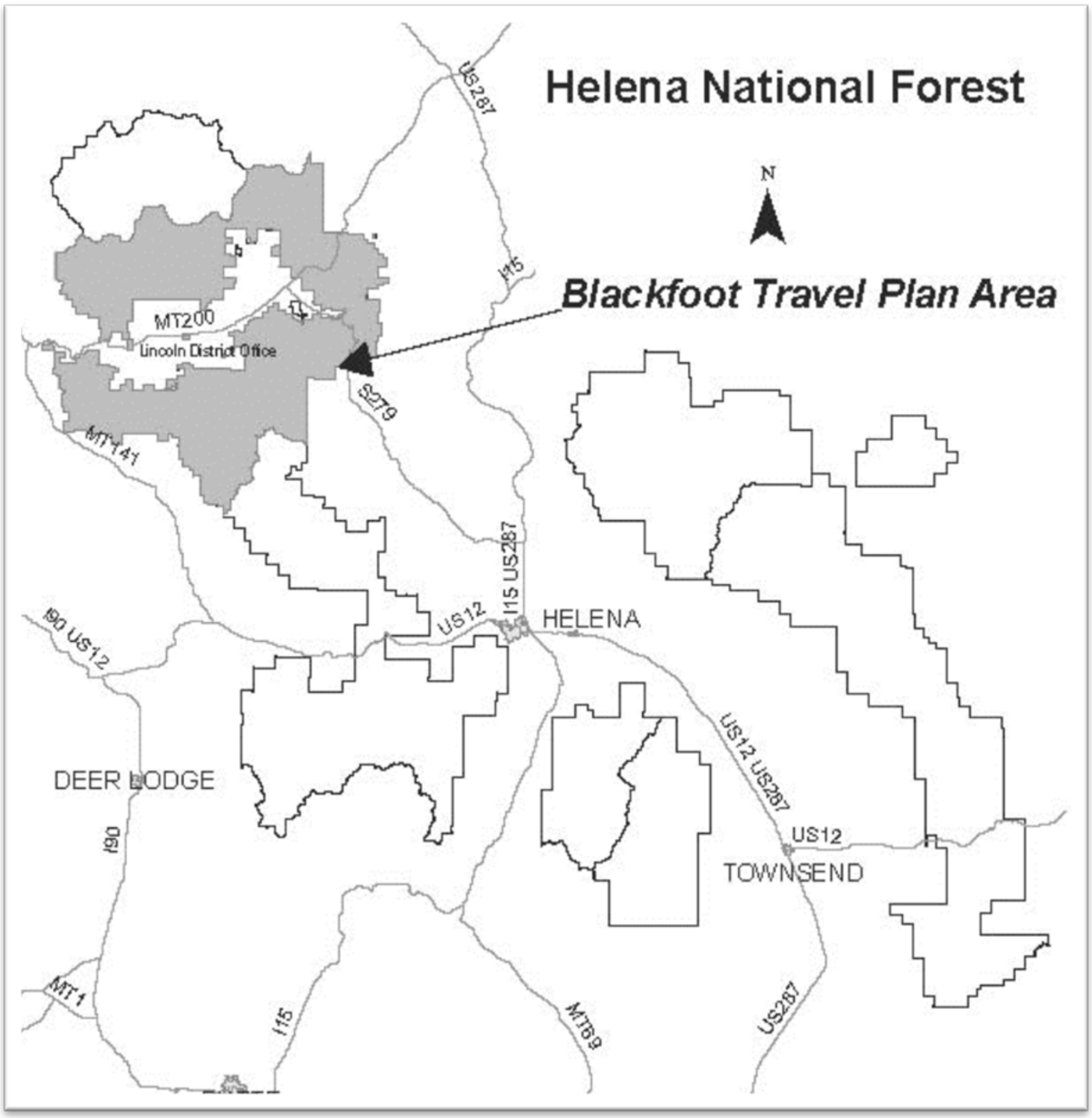

Figure 1. Vicinity map

Background

We originally initiated the Blackfoot travel planning process in 2000 as part of a Forestwide effort; we developed a proposed action and asked for public scoping comments. The project was then delayed because in January 2001, the Forest Service and Bureau of Land Management (BLM) issued a joint decision known as the 2001 Tri-State Off-Highway Vehicle (OHV) Decision; this decision prohibited motorized cross-country wheeled-vehicle travel on all NFS and BLM public lands in a three-state area except on designated routes and areas. The decision amended nine Forest Plans, including the Helena National Forest Plan (appendix A).

In 2004, we completed a Forest Roads Analysis report for Maintenance Level 1-5 roads (see glossary).

In 2005, the Forest Service issued new travel planning regulations (the 2005 Travel Management Rule; USDA Forest Service 2005). It addressed national concerns about the effects of unmanaged motorized off-highway vehicles (OHVs).

As a result of these efforts and with the input we received since 2000 (written comments and subsequent discussions with forest users, landowners, agencies, Forest Service specialists, local government, recreation groups and advocacy groups), we revised the original proposed action.

We re-initiated scoping on a new proposed action in 2010 and issued a Notice of Intent (NOI) to prepare an Environmental Impact Statement in the Federal Register. We received 336 comment letters in response to this effort. We coded, categorized and analyzed these comments along with the results of continued internal scoping to develop a list of significant issues and alternatives for analysis. Based on preliminary analysis of the alternatives, we identified the potential need for a Forest Plan programmatic amendment regarding the standard for big game security index (Forest Plan standard 4a) as part of this proposal and issued a corrected NOI on October 1, 2012 with this new information.

We published a notice of availability of the DEIS for comment in the Federal Register on January 25, 2013. We received a total of approximately 16,941 responses during the 45-day and 90-day public comment periods on the DEIS. As a result of a detailed analysis of all of these comments received, we identified 284 unique comment letters (some associated with multiple senders), which were coded and categorized. The summary of all comments received and the Forest Service response can be found in appendix J. As a result of this public input, we have made several adjustments to this EIS, including the development of a new travel plan alternative (alternative 4 – preferred alternative) and new forest plan amendments proposed for big game security (alternative B – preferred alternative) and management of R1 and N1 management areas.

Changes between the Draft EIS and the March 2014 Final EIS

We describe and analyze a new travel plan alternative (alternative 4) in this FEIS that was not included in the DEIS. This alternative was developed after the public comment period on the draft EIS. It incorporates suggestions submitted by the public (as summarized at the beginning of chapter 1 and in appendix I) and additional discussion among the project interdisciplinary team to achieve a balance between recreational/social resources and natural resource protection.

Alternatives 1, 2 and 3 described in this document are quite similar to those described in the DEIS; however, we have made some minor refinements between the DEIS and the publication of this FEIS consisting of adjustments to mileages to correct errors or oversights and to some project design features, based on additional field review by the IDT and public comments received on the DEIS (see appendix J). No substantial changes were made in overall relative road or trail mileages or acres, or to primary alternative components. While errors have been fixed and additional clarifications made and reflected in updated summaries of alternatives 1, 2 and 3 in this document, the overall effects analysis and conclusions reached in the DEIS for these three alternatives have not substantially changed; where updates were necessary, they have been made and are reflected in the summary and chapter 3 (table 8).

Changes between the DEIS and this FEIS are summarized as follows:

- Considered several new travel plan alternatives based on public comment and additional interdisciplinary team input; one of these was carried forward for detailed analysis as alternative 4, but the others were subsequently dismissed from further analysis. These are described in chapter 2. Alternative 4 is analyzed in detail in this FEIS; the analysis is presented in chapter 3.
- Considered several new big game security Forest Plan amendment alternatives based on public comment, additional interdisciplinary team input, and continued collaboration with MFWP; these were subsequently dismissed from further analysis. Keeping the current big game security standard in the Forest Plan was also analyzed in detail as Forest Plan amendment alternative A. This is described in more detail in chapter 2 and appendix F.
- The big game security forest plan amendment alternative originally described in the DEIS was modified somewhat based on public comment, additional interdisciplinary team input, and continued collaboration with MFWP and is described in this FEIS as alternative B – preferred alternative. This is described in more detail in chapter 2 and appendix F.
- Made minor clarifications and updates to the descriptions and summaries of alternatives 1, 2 and 3 to correct mapping errors in addition to other errors in mileage and trail-length estimates.
- Added a small section of road reconstruction to road 4090/4090 C-1 (Sandbar Creek area) to alternative 3 and alternative 4; this was an oversight when developing alternative 3 for the DEIS.
- Added discussion regarding road maintenance, monitoring and enforcement, and clarification regarding rationale for road storage and decommissioning to the Features Common to Action Alternatives section of chapter 2.
- Added discussion and additional clarification of the need for amending the Forest Plan to allow a non-motorized section of the Continental Divide National Scenic Trail (CDNST) through management area N1 and a motorized section of the Helmville Gould Trail through management area R1 in chapter 2.
- Updated the list of project design features in chapter 2
- Removed best management practices in appendix H. Referenced the full list of Core Best Management Practices (USDA Forest Service 2012) in the project design features section of chapter 2.
- Updated the list of past, present and reasonably foreseeable actions in appendix D
- Added some additional discussion of direct/indirect and cumulative effects processes to the Methodology section of each resource in chapter 3.

- Made revisions or clarifications in some resource sections of chapter 3 in response to public comments on the DEIS (appendix J), new resource information, and updates to past, present and reasonably foreseeable future actions. The aquatic habitat and fish section was revised to evaluate a 300-foot riparian habitat conservation category in addition to the other RHCA categories included in the DEIS. The name of the invasive plant section was changed to noxious weeds and was revised to evaluate in more detail actions occurring within 300 feet of routes. The TES plant section was revised to evaluate in more detail actions occurring within 300 feet of routes.
- Added appendix I, Programmatic Forest Plan Amendment to N1 and R1Management Area Direction.
- Added appendix J, Forest Service Response to Comments on the Draft Environmental Impact Statement

Changes between the March 2014 Final EIS and this Final EIS

We revised this FEIS following the pre-decisional objection period that was initiated on March 28, 2014. Based on specific direction provided by a letter from the Regional Forester dated July 28, 2014 and additional input from the interdisciplinary team, we have made some changes.

Changes between the March 2014 FEIS and this FEIS are summarized as follows:

- Updated implementation and project design feature sections of chapter 2
- Updated Terrestrial Wildlife section of chapter 3 related to grizzly bear, elk, and big game security
- Updated Aquatic Wildlife section of chapter 3 related to bull trout and consistency with INFISH standards
- Updated Socioeconomics section of chapter 3 related to potential impacts to local economies
- Updated Recreation section of chapter 3 related to mountain bike use
- Updated Appendix J, Forest Service Response to Comments on the Draft Environmental Impact Statement
- Updated Appendix F, Big Game Security, related to consistency with existing Forest Plan standards

Regulatory Framework

Several important laws and policies form the regulatory framework applicable to managing the Helena National Forest. The framework is also an integral part of the purpose and need for action. These established many of the parameters for the environmental analysis of travel management for NFS lands encompassing the Blackfoot travel planning area

In addition to the following laws and documents, each specialist report in the project record identifies the regulatory framework that is applicable to their analysis.

- ♦ Forest Service Manuals (FSM) and Handbooks as applicable, including FSM 7700 and 7709 related to transportation planning, and FSH 1900 related to NEPA
- ♦ 2012 Forest Service Planning Rule

- Forest Service regulations under 36 CFR part 212 (forest transportation system) and part 261(use of motor vehicles off forest roads)
- Executive Orders (EO) 11644 and 11989
- Helena National Forest Plan (1986, as amended)
- National Forest Management Act (NFMA)
- National Environmental Policy Act (NEPA)
- Endangered Species Act (1973)
- Clean Water Act (CWA)
- National Historic Preservation Act (HNPA) of 1966, as amended
- Archaeological Resources Protection Act

We provide a brief overview of the Forest Plan below, with more details in appendix A.

The Helena National Forest Plan (Forest Plan, USDA Forest Service 1986, as amended) provides management direction for the planning area. The Forest Plan divides the Forest into management areas (MAs) – each with different goals, resource potentials, and limitations. Management areas are not single, contiguous units; they consist of many individual pieces, each classified with one of the specific management area prescriptions. The decision for this project must be consistent with the standards and guidelines in the Forest Plan.

Forestwide goals, objectives, and standards are found in Chapter II of the Forest Plan (pp. II-1 to II-36). The Plan also provides goals for each of the twelve Management Areas (MAs). Theses MAs are described in Chapter II of the Forest Plan. Each specialist report includes a section on Forest Plan consistency.

The Forest Plan includes direction for road and trail management and provides important guidance for this project. Forestwide direction that is applicable to this project includes:

- Goal 15 (Forestwide II/2) – develop and implement a road management program with road use and travel restrictions that are responsive to resource protection needs and public concerns
- Objectives, Facilities (Forestwide II/6) – transportation facilities such as roads and trails will be constructed, managed and maintained to cost effectively meet the Forest land and resource objectives and visitors' needs. The Forests transportation system will be coordinated and integrated with public and private systems to the fullest extent possible….soil and water conservation practices will be applied…to ensure that Forest water quality goals will not be degraded
- Forestwide Standards, Facilities - Road Management (Forestwide II/31-32) – the criteria to be used for road, trail or area restrictions are safety, resource protection, economics, conflicting uses, facility protection, public support, land management objectives

Management Areas within the Blackfoot travel planning area include: A1, L1, L2, M1, N1, R1, T1, T2, T3, T4, T5, W1, W2 and other lands. We would adhere to standards and guidelines for each of these management areas for this project (see appendix A).

For additional information on the MA goals, resource potentials, and limitations see the Helena National Forest Plan on pages III: 5-7, 17-26, and 30-55.

Purpose and Need for Action

The overall objective of this proposal is to provide a manageable system of designated public motorized access routes within the Blackfoot planning area, consistent with and to achieve the purposes of the Forest Plan and the travel management regulations at 36 CFR 212 subpart B.

To meet the overall objective, there is a need to:

- Designate public wheeled motorized and non-motorized use for roads and trails
- Mitigate resource concerns associated with certain routes and uses (resource concerns by route are described in more detail in the project record). For off-road motor vehicle use, the objective is to minimize effects as described at 36 CFR 212.55(b).
- Ensure route system is in compliance with Forest Plan direction and NCDE Access Management Guidelines (evaluated with Moving Windows analysis) for grizzly bear security and habitat within the recovery zone
- More closely align current science, local conditions and other information with elk security needs that meet the intent of the Forest Plan; ensure Helena Forest Plan (USDA Forest Service 1986, as amended) management direction applicable to big game security is up-to-date and based on the best available information.
- Ensure the route system provides continued access for resource management needs (e.g. vegetation management and fire).
- Ensure the route system minimizes exclusive use from and to private land and mining claims and that all designated routes provide for public access
- Reduce the complexity of the current Forest Visitor map
- Provide for wheeled motorized vehicle travel for camping and parking associated with camping near designated system routes, including roads and trails (unless signed otherwise) as long as no new permanent routes are created by this activity; no damage to existing vegetation, soil, or water resource occurs; travel off-route does not cross streams; and travel off-route does not traverse riparian or wet areas
- Provide for parking safely next to the side of the road up to 30 feet from the edge of a designated route.

Executive Order 11644 (1972) as amended required the Forest Service to, among other things, "…designate the specific areas and trails on public lands on which the use of off-road vehicles may be permitted, and areas in which the use of off-road vehicles may not be permitted." The Helena National Forest Plan complied with this Executive Order (USDA Forest Service 1986, p. 7). The executive order, Section 8, then requires the agency to "monitor the effects of the use of off-road vehicles [and] from time to time amend or rescind designations." Public motor vehicle use of much of the existing system continues to be manageable and consistent with the executive order and current travel management regulations; but we have identified a need for change in some areas.

In January 2001, the Forest Service (FS) and Bureau of Land Management (BLM) issued a joint decision known as the 2001 Tri-State Off-Highway Vehicle (OHV) Decision; this decision prohibited motorized cross-country wheeled-vehicle travel on all National Forest System (NFS) and BLM public lands in a three-state area except on designated routes and areas. This Decision allowed off-road vehicle camping within 300 feet of roads and trails, but required visitors to select campsites by non-motorized means and access the campsites by the most direct route causing the least damage. The decision amended nine Forest Plans, including the Helena National Forest Plan.

In November 2005, the Forest Service published new implementing regulations (Federal Register 2005: 70 FR 68264) (PF-DIRECTION-003). This rule, known as the 2005 Travel Management Rule (36 CFR 212 Subpart B), replaced the previous regulations.

While carrying forward the requirements of the executive order, it makes two other national requirements. First, all units will now use a consistent approach to designations by identifying on a map those routes and areas that are open to wheeled motorized use. Second, once designations are in place, motorized travel off of designated routes and areas will be prohibited.

Cross-country motorized travel has been prohibited since 2001 on the Helena National Forest; therefore no change is needed for most lands to be consistent with the rule. However, existing user-built or unclassified motorized routes were unaffected by the 2001 decision. Hence this proposal must determine future use of those unclassified routes.

Sideboards Used to Develop the Proposed Action

We reviewed and incorporated the criteria for designation of roads, trails and areas found in 36 CFR Part 212.55(b) in developing the proposed action. We also used the following:

- ♦ Roads and trails currently designated as closed are not assumed to remain designated as closed
- ♦ Unclassified routes (also known as user-created routes) and motorized routes will be identified on existing condition maps and determined “open motorized,” “open non-motorized,” or “closed”
- ♦ Consider construction or reconstruction opportunities to provide wheeled motorized use and to better protect resource conditions
- ♦ Determine the long-term status of all routes and prescribe closure methods (as site-specific information becomes available) as appropriate, including decommissioning.
- ♦ Identify type and season of use (non-winter) for all system roads and trails
- ♦ Identify areas where wheeled motorized use would be appropriate as well as the type of use for each area (OHV, motorcycles, etc.)
- ♦ Clearly identify roads of open public access for the Washington Gulch/Jefferson Gulch Roads as directed by Judge Mizner in his summary judgment
- ♦ Identify opportunities for a broad spectrum of motorized and non-motorized uses
- ♦ Place emphasis on reducing the complexity of visitor maps by reducing the number of different travel restriction types including seasonal restrictions; this will assist in making travel management simple and concise (i.e. current plans have 12-15 different closures); the process needs to be simplified for public understanding and management efficiency
- ♦ Continue to coordinate with the Bureau of Land Management, Montana Department of Natural Resources and Conservation, and private land owners to identify access routes necessary for land management and to reduce or eliminate routes that are not necessary to meet the purpose and need for action or project objectives

- ♦ Incorporate collaborative efforts conducted since 2000 and the detailed information gathered into the alternatives
- ♦ Allow administrative use for management needs and emergency access on open routes, routes closed yearlong and routes closed seasonally
- ♦ If other existing unclassified routes are discovered that are not currently captured in this analysis, these routes would not be identified as National Forest System routes and would therefore be closed to motorized use and legally unavailable to the public without further NEPA analysis.

We developed the preferred big game security forest plan amendment alternative to address the need to more closely align current science, local conditions, and other information with species' needs that meet the intent of the Forest Plan, and to ensure that the Helena National Forest Plan (1986) management direction applicable to the road and trail system in the Blackfoot travel planning area is current and based on the best available information, particularly related to big game security standards (as described in the list of need statements above).

In the twenty-eight years since the development of the Forest Plan, a substantial amount of scientific studies, surveys, and other information have accrued. Studies completed suggest other measures that are also appropriate for measuring big game security, and are more closely tied to open motorized route densities during times of elk stress and increased vulnerability (i.e. hunting season). In addition, the elk harvest metrics used by Montana Fish, Wildlife and Parks (MFWP) to evaluate and manage elk vulnerability during the hunting season (the reason for providing security) have evolved, leaving part of the standard as currently written useless because it relies on data methods no longer available or in practice. As a result, public access is being constrained without the clear benefits for elk envisioned by the standard.

A programmatic Forest Plan amendment for the Blackfoot travel planning area is needed to more closely align current science, local conditions, and other information with species' needs that meet the intent of the Forest Plan. A new big game security standard is needed that considers the impacts of open motorized routes on elk security, establishes blocks of secure habitat, and can be measured regardless of changes in hiding cover.

Preferred Alternative

In response to the purpose and need for action, public comments on the DEIS and additional interdisciplinary team discussions, we developed the preferred travel plan alternative using current Forest Transportation System maps, information from the 2004 Helena Roads Analysis Process, field verification and monitoring, and public input received since 2000. Consistent with our travel planning regulations, we would designate the resulting available wheeled motorized access routes and areas on a motor vehicle use map and public use of a motor vehicle other than in accordance with those designations would be prohibited as per 36 CFR 261.13.

The preferred travel plan alternative includes closing some roads and trails that are currently open to motorized use and opening some roads and trails for motorized use that are currently closed. It also includes some limited new construction of roads and trails. We would not designate any areas for off-route wheeled motorized vehicle use, except for dispersed camping (or parking associated with dispersed camping) within 300 feet of a designated system route with the following stipulations:

- ♦ No new permanent routes are created by this activity

- No damage to existing vegetation, soil, or water resources occurs
- Travel off-route does not cross streams
- Travel off-route does not traverse riparian or wet areas
- Recreationalists will use the most direct route to disperse camp
- Recreationalists must select their site by non-motorized means

The preferred travel plan alternative would designate motorized and non-motorized routes for non-winter travel on the Lincoln Ranger District and would result in changes to the existing motorized and non-motorized route system. Some roads and trails are proposed for closure and in this case, the preferred travel plan alternative includes proposed levels of closure (storage levels and decommissioning levels, as described in more detail in chapter 2 and displayed in table 4).

We also developed a preferred big game security forest plan amendment alternative in response to the purpose and need for action, public comments on the DEIS, internal comments and additional collaboration with the Montana Fish, Wildlife and Parks (MFWP). We are proposing a programmatic amendment to the Helena National Forest Plan regarding the standard for the big game security index. With this preferred forest plan amendment alternative (Forest Plan amendment alternative B), the Forest Plan Standard 4(a) (described briefly in appendix A and in detail in appendix F) language would be replaced with new language in order to establish a new big game security standard. This standard would apply only to National Forest System lands within those portions of an elk herd unit that are within the Lincoln Ranger District, Helena National Forest administrative boundary; it would not apply to other portions of the Helena National Forest.

Another Forest Plan amendment would also be necessary to address trails within Forest Plan Management Area N1 (Research Natural Areas) and R1 (undeveloped lands suited for dispersed recreation), as discussed in more detail in chapter 2.

Public Involvement

We released the Blackfoot (non-winter) Travel Plan Project Notice of Intent and Proposed Action on October 29, 2010 for a 30-day scoping period. We subsequently extended the scoping period through January 7, 2011 and continue to accept comments throughout the process. We mailed a scoping newsletter with a detailed purpose and need and proposed action description to 617 stakeholders including private landowners, agencies, organizations, and tribes. We also posted information on the Helena National Forest website, published a news release on November 1 and 23, 2010, and published a legal notice in the *Missoulian*, I*ndependent Record*, and *Great Falls Tribune* newspapers. We held a public open house on November 18, 2010 and November 30, 2010 at the Lincoln Ranger District in Lincoln, Montana to provide project information, answer questions and accept comments. We have received a total of 336 comment letters from you, the public; including agencies, organizations, individuals and elected officials; in response to our request for input (appendix B). We have also been working with the following collaborative groups on this project and have taken their input into consideration: Lincoln Restoration Committee; Blackfoot Challenge; Southwest Crown of the Continent; Montana Restoration Committee and The Wilderness Society, and Wildlands CPR.

We released a corrected Notice of Intent on October 10, 2012 with more information regarding the anticipated need for a Forest Plan amendment as a result of this project, and the development of an alternative to the proposed action. We also mailed a letter to all those on the 2010 scoping mailing list with this new information and posted updated information on our Forest website.

The project interdisciplinary team (IDT) developed a list of issues to address using the comments from the public, organizations, other agencies, tribes and collaborative groups.

We published a notice of availability of the DEIS for comment in the Federal Register on January 25, 2013, and a legal notice of the opportunity to comment on the DEIS in the Helena Independent Record February 2, 2013. The document was also posted to the Forest website. A CD of the DEIS or a link to the DEIS were sent to 575 individuals, groups, agencies and tribes. Letters were included with the DEIS. The 45-day comment period on the travel plan ended on March 11, 2013 and the 90-day comment period on the forest plan amendment for big game security ended on April 25, 2013.

We received a total of approximately 16,941 responses during the 45-day and 90-day public comment period on the DEIS; approximately 16,434 commenters were from The Wilderness Society and submitted an identical form letter and approximately 507 commenters either submitted different form letters or original comments. As a result of a detailed analysis of all of these DEIS comments received, we identified approximately 284 comment letters (some associated with multiple senders), which were coded and categorized. The summary of all comments received and the Forest Service responses can be found in appendix J.

Issues

Issues serve to highlight effects or unintended consequences that may occur from the proposed action and alternatives, giving opportunities during the analysis to reduce adverse effects and compare trade-offs for the decision maker and public to understand. An issue is phrased as a cause-effect statement relating actions under consideration to effects. An issue statement describes a specific action and the environmental affects expected to result from the action (FSH 1909.15.12.4).

The CEQ regulations have specific direction for issues in EISs. Agencies shall determine the scope and the significant issues to be analyzed in depth in the environmental impact statement (40 CFR 1501.8(a) (2)), and identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review, narrowing the discussion of these issues in the statement to a brief presentation of why they will not have a significant effect on the human environment (40 CFR 1501.7(a) (3)). We separated the issues into two groups: significant and non-significant issues. Significant issues were defined as those directly or indirectly caused by implementing the proposed action. Non-significant issues were identified as those: 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan, or other higher level decision; 3) irrelevant to the decision to be made; or 4) conjectural and not supported by scientific or factual evidence. The Council on Environmental Quality (CEQ) NEPA regulations explains this delineation in Sec. 1501.7, "…identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review" (Sec. 1506.3).

Significant Issues

The following topics were identified as Significant Issues by the IDT for the Blackfoot Travel Plan.

Wildlife (Grizzly Bear, Mountain Goat, Elk) Habitat Security

Forest roads and overall road density have the potential to affect the quality of wildlife habitat, including habitat security for a variety of species such as grizzly bears, mountain goats and elk. Increasing road density could result in adverse effects while decreasing road density could result in beneficial effects, depending on the species and the habitat affected.

Measurement Indicators:

- Open and total road densities and grizzly bear security core habitat
- Consistency with Forest Plan grizzly bear standards/guidelines and USFWS grizzly bear recommendations
- Potential effects associated with key grizzly bear habitats and seasons of use.
- Summer range Forest Plan Standard 3 for elk hiding cover and habitat effectiveness by Elk Herd Unit (EHU)
- Hiding cover/open road densities Forest Plan Standard 4(a) by EHU
- Hunting season elk security by EHU
- Winter Range Forest Plan Standard 3 for thermal cover by EHU (p. II/17) and Forest Plan Standard 4(c) (p. II/18)
- Motorized vehicle use in the Stonewall and Red Mountain areas and the connecting ridgeline for mountain goats

We have conducted an effects analysis and documented this in the wildlife specialist report and the wildlife section of chapter 3 of this document. This section will describe in more detail how these measures are defined for each species and used in the analysis.

Water Quality and Fisheries

Forest roads can contribute to increased soil erosion, increased sediment delivery and peak flows that could impact water quality and aquatic habitat, especially if road densities in a watershed are high. These effects would vary depending on the location of a road on the landscape (sloped or flat ground), their proximity to streams or drainages, and timing of precipitation events.

Measurement Indicators:

- Road sediment reduction estimates resulting from road storage or decommissioning in tons per year
- Miles of routes decommissioned along streams in the various riparian habitat conservation areas (RHCA) buffer categories, ranging from 50 feet to 300 feet; more discussion of why these RHCA categories were used is described in the aquatic habitat section of chapter 3
- Number of road stream crossings restored and relationship to fish bearing streams
- Miles of high/moderate risk roads and relationship to fish bearing watersheds
- Consistency of alternatives with Forest Plan guidance for threatened, endangered and sensitive fish and aquatic species

We have conducted an effects analysis and documented this in the soil, water and fisheries reports and in these sections of chapter 3 of this document.

Quality Motorized Trail/Route System

Changes in the transportation system have the potential to affect the quality of the recreation experience for motorized users. Prohibiting motorized travel on unclassified roads and trails could limit access throughout the planning area. Reductions in open motorized routes could adversely impact this experience while increases could result in beneficial effects to the overall motorized experience.

Measurement indicators:

- Miles of routes open for motorized use and overall extent of trail system
- Miles of roads available for possible motorized, mixed use
- Miles of new motorized trail construction
- Overall ease-of-use of the motor vehicle use map for motorized users (level of complexity)

We have conducted an effects analysis and documented this in the recreation and transportation reports and chapter 3 of this document.

Quality Non-motorized Trail/Route System

Changes in the transportation system have the potential to affect the quality of the recreation experience for non-motorized users. Reductions in non-motorized routes could adversely impact this experience while increases could result in beneficial effects to the overall non-motorized experience.

Measurement Indicators:

- Miles of routes open for non-motorized use only and overall extent of the system
- Miles of new non-motorized trail construction or miles of new non-motorized routes designated on existing routes
- Overall ease-of-use of Forest Visitor Map showing designated non-motorized trail system (level of complexity)
- Miles of motorized and non-motorized routes in Inventoried Roadless Areas

We have conducted an effects analysis and documented this in the recreation specialist report and in chapter 3 of this document.

Continental Divide National Scenic Trail

The Continental Divide National Scenic Trail (CDNST) occurs within the planning area. The primary purpose of this trail is to provide a “continuous, appealing trail route, designed for the hiker and horseman, but compatible with other land uses…” It is to be managed primarily for non-motorized recreational opportunities. The CDNST currently has sections that are motorized. Motorized use and roads/road density within the CDNT have the potential to adversely affect the quality of non-motorized recreational opportunities within this corridor while improved or enhanced non-motorized opportunities have the potential for beneficial effects.

Measurement Indicators:

- Miles of motorized routes within the CDNST
- Miles of non-motorized routes within the CDNST

- Consistency of alternatives with the intent of the 2009 CDNST Comprehensive Plan and the Forest Plan

We have conducted an effects analysis and documented this in the recreation report and in the recreation section of chapter 3 of this document.

Consideration of Objections

We distributed the FEIS and both the draft Blackfoot Travel Plan Record of Decision (ROD) and the draft Big Game Security ROD on March 28, 2014, initiating the respective 45-day and 60-day pre-decisional objection periods. The Blackfoot Travel Plan draft ROD identified Travel Plan alternative 4 as the selected alternative for implementation and the Big Game Security draft ROD identified Big Game Security Forest Plan Amendment alternative B as the selected alternative.

We received 21 objections during the objection period. We held an objection resolution meeting on June 25, 2014 and a second one on December 10, 2014. We have revised this Blackfoot Travel Plan FEIS since it was released in March 2014 to incorporate direction provided by the July 28, 2014 letter from the Regional Forester and to fix an error in the cataloging of public comments received on the DEIS, captured in appendix J. A more complete list of changes made to the FEIS since it was issued in March 2014 is described earlier in this chapter.

Project Record

This document hereby incorporates by reference the project record (40 CFR 1502.21). The project record contains project specialist reports and other technical documentation and data used to support the analysis and conclusions in this document.

Relying on specialist reports and the project record helps implement the CEQ Regulations' provision that agencies should reduce NEPA paperwork (40 CFR 1500.4), that documents shall be analytic rather than encyclopedic, and that documents should be concise (40 CFR 1502.2). The objective is to furnish enough site-specific information to demonstrate consideration of the environmental impacts of the alternatives and how these impacts can be mitigated, without repeating detailed analysis and background information available elsewhere. The project record is available at the Lincoln Ranger District in Lincoln, MT.

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Chapter 2. Alternatives, Including the Preferred Alternative

Introduction

This chapter describes and compares the no-action travel plan alternative and three travel plan action alternatives considered by the Responsible Official for the Blackfoot Travel Plan. It also describes the no-action alternative big game security amendment, and one action alternative big game security amendment. The proposed big game security amendment would establish a new standard for elk security for those herd units within the planning area

This chapter includes a detailed description of each alternative (alternative maps are provided in appendix G, and road and trail details in appendix C), how they were developed, alternatives considered but eliminated from detailed study, and presents the alternatives in comparative form, sharply defining the differences between each alternative and providing a clear basis for choice among options by the decision maker. Numbers such as acres and miles are approximate due to the use of GIS data and rounding.

As described in chapter 1, we developed the range of alternatives based on public comments and input we received since 2000, including the input of several collaborative groups. We used this input to develop the list of significant issues shown in chapter 1 and analyzed in detail in chapter 3. Non-significant issues are also discussed in chapter 3 but more briefly. Summary tables at the end of this chapter illustrate the differences between the alternatives by management objectives, significant issues and effects.

Any existing route not identified as a Helena National Forest System route in this travel plan decision would be considered an unclassified route and would not be available for motorized use. System roads and motorized trails would also be open to people to walk, hike, bike, or ride horses.

Each travel plan action alternative was designed to minimize off-road vehicle impacts (per executive orders, see appendix A) and is included in the analysis. The analysis presented in this chapter focuses on the effects of the proposed *changes* to the current designated system. It does not analyze the effects of the whole designated system.

Implementing any travel plan action alternative would require a programmatic Forest Plan Big Game Security Amendment and Forest Plan Amendment for Management Areas R1 and N1; these are described in more detail in the following sections.

Alternatives Considered in Detail

Travel Plan Alternative 1 – No Action (No Change) – Continue Current Management

The no-action alternative is required under NEPA regulations [40 CFR 1502.14(d)]. This alternative represents the existing, baseline condition or trends by which the action alternatives are compared. Alternative 1 – no action would defer implementation of the 2005 Travel Management Rule, and would not result in a motor vehicle use map; the Forest Visitor map would continue to be used to show the road and trails open to motorized use. We would not make changes to the existing system of available public motorized routes and areas within the Blackfoot travel planning area. We provide maps of alternative 1 in appendix G, road and trail details in appendix C and a summary of components (existing condition) in table 2. Tabular comparisons between each of the alternatives are provided at the end of this chapter.

Alternative 1 – no action is represented by the current Forest Visitor map and supporting prohibitions. Permissible motorized uses include those routes and areas not otherwise prohibited, including maintaining use by the public, in some cases, of currently unclassified routes acquired as part of the land exchange process. There are approximately 60 miles of unclassified routes in the planning area. Under this alternative, motorized access for dispersed camping is permitted up to 300 feet from the edge of the motorized route surface.

The Helena National Forest Plan, as amended, prohibits wheeled, cross-country travel (2001 Tri-State OHV Decision). The 2001 Tri-State OHV Decision allowed off-route vehicle camping within 300 feet of roads and trails; but, required visitors to select camp sites by non-motorized means and access the campsites by the most direct route causing the least damage. The expectation was that relatively few new sites would develop within the 300-foot area, as most dispersed camping/parking areas already have an established route to them. The same is applicable for the Blackfoot travel planning area. Alternative 1 would continue to implement this 2001 Tri-State OHV Decision allowing motorized use within 300 feet from the edge of roads and motorized trails for the purposes of dispersed camping.

However, wheeled motorized use of unclassified routes that existed at the time of that Forest Plan amendment are unaffected by this prohibition. That use is not defined as cross-country travel under the amended Forest Plan as long as the vehicle fits within the pre-existing width of the route. As discussed above, the motorized access for dispersed camping is an exception and that use is also permitted up to 300 feet from the edge of route surface. Under alternative 1 – no action, these uses would continue. Parking safely next to the side of a road within 30 feet from the edge of the road is also permitted under the existing condition.

Table 2 summarizes the existing miles for each type of use for alternative 1 – no action (no change), the existing condition. Table 1 in chapter 1, and the glossary p. 571 provides useful definitions helpful in understanding the road and trail terminology used in this document.

To summarize the current condition, there are approximately:

- 446 miles of National Forest System routes in the Blackfoot travel planning area open to public motorized use
- 56 miles of motorized trails
- 71 miles of non-motorized trails
- 92 miles of roads acquired through land acquisition between 2006 and 2011 (13 miles of which are currently open to motorized use)
- 60 miles of unclassified routes, and approximately 20 miles of these are currently open to public motorized use
- 23 miles of routes considered to be naturally decommissioned per field investigations (roads that are vegetated to the point that they are not drivable and thus are reclaimed on their own or naturally decommissioned)

Under the existing condition, trails would be managed as they are currently. We considered three trails in the planning area as high-profile or 'trails of interest' because of their popularity of use and public interest: CDNST, Helmville-Gould and Stonewall. Appendix G displays these trails of interest in the planning area and how they are currently managed in terms of types of use permitted.

Appendix C provides a route-by-route accounting of the current condition (alternative 1- no action) compared to what is proposed under alternative 2, alternative 3 and alternative 4. Appendix G provides a detailed map of alternative 1 – no action showing the existing road and trail system in the planning area, using the code definitions included in table 2.

Table 2. Alternative 1 – No Action: miles of each type of use

Use code (corresponding designation on alternatives maps)[1]	Use Code Definitions	Alternative 1 Existing Condition (miles)
01-RES	Roads closed to motorized use yearlong	57
02-RES	Roads closed to motorized use 10/15 – 12/1	8
04-RES	Roads closed to motorized use 12/ 2 – 5/15	2
06-RES	Roads closed to wheeled motorized use yearlong	104
09-RES & 10-RES	Roads closed to wheeled motorized use 10/15-6/30	116
11-RES & 12-RES	Roads closed to wheeled motorized use 9/1-6/30	16
CLOSED-AQ	Roads acquired in 2011 – closed yearlong to wheeled motorized use	16
CLOSED-LX	Roads acquired in 2006 – closed yearlong to wheeled motorized use	63
M-07.00	Motorized trail - vehicles less that 50" - no seasonal restrictions	31
M-10.00	Motorized trail - single track - no seasonal restrictions	19
NATURALLY RECLAIMED	Naturally decommissioned/reclaimed – not drivable	23
NM & NOMTR	Non-motorized trail	71
OPEN-HWY LEGAL	Open highway legal vehicles - no seasonal restrictions	277
OPEN-LX	Roads acquired in 2009 – open to motorized use	13
ROAD NEW CONSTRUCTION	Road new construction	0
UC-CLOSED	Unclassified road or trail – closed to wheeled motorized use	40
UC—M-07.00	Unclassified motorized trail - no seasonal restrictions	5
UC—M-11.00	Unclassified motorized trail – closed to wheeled motorized use 9/1 – 6/30	1
UC-OPEN	Unclassified road or trail – open to wheeled motorized use yearlong	12
UC-OPEN10	Unclassified road with seasonal restriction 10-RES, closed to wheeled motorized use 10/15-6/30	2

1 open motorized routes, motorized routes closed yearlong and motorized routes closed seasonally may receive occasional administrative use

If alternative 1 were selected for implementation, we would not amend the Forest Plan to address existing trails in management areas N1 and R1. The existing condition in terms of travel planning would remain unchanged. However, the method by which big game security during the hunting season would be measured would be based on that associated with the big game security Forest Plan programmatic amendment Alternative B, if selected.

Travel Plan Alternative 2

We developed this alternative using current Forest transportation system maps, information from the 2004 Helena Roads Analysis Process, field verification and monitoring, and public input received since 2000. Actions common to the action alternatives are described later in this chapter following the description of alternative 4. We provide maps of alternative 2 in appendix G, road and trail details in appendix C and summaries of components in table 3. Tabular comparisons between each of the alternatives are provided at the end of this chapter.

Alternative 2 was developed with a focus on maintaining as much of the road and trail system as possible to meet the purpose and need for action while minimizing known site-specific resource impacts (e.g. fish or water quality concerns, achieving INFISH standards, addressing elk or grizzly bear needs). Routes with concerns such as public access through a legal easement, multiple stream crossings, continual rutting or poor location were taken into consideration for closure or decommissioning under this alternative. Some limited new road and trail construction is proposed as well to address access needs in some areas

Consistent with the travel planning regulations at 36 CFR 212 Subpart B, we would designate the resulting available wheeled motorized access routes and areas on a motor vehicle use map and public use of a motor vehicle other than in accordance with those designations would be prohibited as per 36 CFR 261.13. Each of the unclassified roads has been evaluated and either included in the roads and trail system or identified for closure, storage or decommissioning.

Under alternative 2, we would allow wheeled motorized vehicle travel within 300 feet of the edge of designated system routes, including roads and trails (unless signed otherwise) for the purposes of dispersed camping (and parking associated with camping) as long as:

- No new permanent routes are created by this activity
- No damage to existing vegetation, soil, or water resources occurs
- Travel off-route does not cross streams
- Travel off-route does not traverse riparian or wet areas
- Recreationalists will use the most direct route to disperse camp
- Recreationalists must select their site by non-motorized means

Access to dispersed camping is identified as an acceptable use in the planning area under the 2001 Tri-State Decision and the 2005 Motorized Travel Rule, and we have observed that, in general, this has occurred within acceptable environmental limits. Where site-specific issues have occurred, we issued closures for resource protection. We have this tool available when needed; therefore, we propose to continue this practice under alternative 2 and feel this is consistent with the 2001 Tri-State OHV Decision ; the 2005 Travel Planning Rule; Executive Order 11644 (Use of Off-Road Vehicles on Public Lands); the Helena Forest Plan and Forest Service Manual 7700 (Travel Management).

Under alternative 2 we would also allow parking safely next to the side of a motorized route within 30 feet from the route edge. Parking next to the road means a person could picnic, camp, bicycle, hike, or do any other legal recreational activity. Forest users would have the obligation to not impede normal traffic flow.

Table 3 reflects the miles for each type of use for alternative 2 – proposed action in comparison to alternative 1 – no action. If alternative 2 – proposed action were implemented:

- Approximately 94 miles of routes would no longer be available for public wheeled motorized use (352 miles of National Forest System routes would still be available and shown on the MVUM)
- Approximately 36 additional miles of motorized trails would be designated (92 miles of motorized trails would be available)
- Approximately 49 additional miles of non-motorized trails would be designated including new mountain bike trail construction (120 miles of non-motorized trails would be available)
- Approximately 0.2 miles of new road would be constructed
- Approximately 2 miles of new motorized trail would be constructed
- Approximately 31.5 miles of new non-motorized trail would be constructed (31 miles of this would be for new mountain bike trail construction)
- Of the original 92 miles of road acquired through land acquisition between 2006 and 2011, approximately 62 miles would be identified for closure, storage or decommissioning.
- Of the existing 60 miles of unclassified routes, approximately 39 miles would be identified for closure, storage or decommissioning
- Approximately 135 miles of roads would be stored (see table 4)
- Approximately 8 miles of roads would be decommissioned (see table 4)
- Five trailheads and two parking areas would be designated

Table 3. Alternative 2 – miles of each type of use compared to alternative 1

Use code (corresponding designation on alternatives maps)[1]	Type of Use (corresponding designation on alternative maps)	Alternative 1 Existing Condition (miles)	Alternative 2 Proposed Action (miles)[2]
01-RES	Roads closed to motorized use yearlong	57	86
01-RES-STO	Closed roads that are stored	0	27
01-STO	Open or seasonal roads that are stored	0	108
02-RES	Roads closed to motorized use 10/15 – 12/1	8	0
04-RES	Roads closed to motorized use 12/2 – 5/15	2	2
06-RES	Roads closed to wheeled motorized use yearlong	104	96
09-RES & 10-RES	Roads closed to wheeled motorized use 10/15 – 6/30	116	85
11-RES & 12-RES	Roads closed to wheeled motorized	16	14

Use code (corresponding designation on alternatives maps)[1]	Type of Use (corresponding designation on alternative maps)	Alternative 1 Existing Condition (miles)	Alternative 2 Proposed Action (miles)[2]
	vehicles 9/1-6/30		
CLOSED-AQ	Roads acquired in 2011 – closed to wheeled motorized use yearlong	16	0
CLOSED-LX	Roads acquired in 2009 – closed to wheeled motorized use yearlong	63	0
DECOM	Roads that would be decommissioned	0	8
M-07.00	Motorized Trail - vehicles less that 50" - no seasonal restrictions	31	49
M-08.00	Motorized Trail – vehicles less than 50" – closed 9/1-6/30	0	24
M-08.10	Motorized Trail - vehicles less than 50" - closed 10/15-6/30	0	0
M-08.105	Motorized Trail - vehicles less than 50" - closed 10/15-5/31	0	0
M-10.00	Motorized Trail - single track - no seasonal restrictions	19	17
MT NEW CONSTRUCTION	New motorized trail construction	0	2
NATURALLY DECOMMISSIONED/RECLAIMED	Roads naturally decommissioned/reclaimed – Not drivable	23	19
NM & NOMTR & NOMTR-FS	Non-motorized trail including new mountain bike routes	71	120
NM & NOMTR NEW CONSTRUCTION	New non-motorized trail construction including mountain bike trail construction	0	31.5
NM RECONSTRUCTION	Non-motorized trail relocated	0	0
OPEN-HWY LEGAL	Open highway legal vehicles - No seasonal restrictions	277	251
OPEN-LX	Roads acquired in 2009 – open to motorized use	13	0
ROAD NEW CONSTRUCTION	Road new construction	0	0.2
Road Reconstruction	Road relocated/reconstructed	0	0
UC-CLOSED	Unclassified road or trail – closed to wheeled motorized use	40	0
UC—M-07.00	Unclassified motorized trail - no seasonal restrictions	5	0
UC-M-11.00	Unclassified motorized trail – closed to wheeled motorized use 9/1-6/30	1	0
UC-OPEN	Unclassified road or trail – open to wheeled motorized use yearlong	12	0
UC-OPEN10	Unclassified road seasonal restriction 10-RES, closed to wheeled motorized use 10/15-6/30	2	0

1 open motorized routes, motorized routes closed yearlong and motorized routes closed seasonally may receive occasional administrative use

2 This column shows the resulting/total/cumulative routes available if the changes proposed for alternative 2 are made; these are approximate and due to rounding and changes between categories, may not exactly match the narrative discussion.

We considered three trails in the planning area as high-profile or 'trails of interest' because of their popularity of use and public interest: CDNST #440, Helmville-Gould #467 and Stonewall. Under alternative 2, these trails of interest in the planning area would be managed as they are currently; no changes are proposed (see appendix G for a map of these trail corridors and the types of uses that would continue to be permitted and a summary by trail section in appendix C).

The CDNST would continue to be a mix of motorized and non-motorized sections; Flesher Pass to Stemple Pass would continue as a motorcycles-only trail and Stemple Pass to Marsh Creek would continue as a motorized trail (open to vehicles 50 inches or less in width with no seasonal restrictions). Approximately 4 miles of the CDNST would be located along a road. There would be no increase in motorized use along the CDNST. Mountain bike use would be allowed but would not be specifically promoted.

The Helmville-Gould and Stonewall Trails (see appendix G for a map) would continue to be managed as motorized trails (open to vehicles 50 inches or less in width with no seasonal restrictions).

Table 3 illustrates how mountain bike trails would be delineated with other types of uses.

Trailheads and parking areas would be designated under alternative 2 to facilitate road and trail changes, as follows (see maps in appendix G for more details). These designations would improve public safety (by providing a safe place for vehicle parking and turning around) and reduce resource damage by confining the boundaries of use)::

- Trailhead along 485 in T15N R9W, Section 27
- Trailhead along U-427 in T15N R7W, section 11
- Trailhead along 1892-H1 in T13N R9W, Section 8
- Trailhead along U-NEW-1006 in T13N R7W, Section 11
- Trailhead along 1841in T14N R7W, Section 20
- Parking area along 4106 in T15N R9W, Section 33
- Parking area along 329 in T13N R9W Section 27

To further understand how specific routes would change under this alternative; see the route-by-route accounting provided in appendix C; the maps provided in appendix G; and the summary tables at the end of this chapter.

This alternative proposes roads for closure, storage and decommissioning. For the purpose of this analysis, we assume all roads proposed for storage under alternative 2 would be stored at the 3-S level, and all roads proposed for decommissioning would be decommissioned at the 4 level. Table 4 illustrates what these terms means and the various closure levels for each category.

Programmatic Forest Plan Amendments

Implementing alternative 2 would require a programmatic amendment to the Helena National Forest Plan regarding the standard for big game security index. The proposed programmatic plan amendment would establish a new standard for big game security. This standard would apply only to National Forest System lands within those portions of an elk herd unit that are within the Lincoln Ranger District, Helena National Forest administrative boundary. In the next section (following the description of travel plan alternative 4) and in appendix F, we describe in detail how the wording in the Forest Plan would change as part of this amendment.

There would also be a need for a programmatic Forest Plan amendment to address Management Areas N1 and R1.

For Management Area N1 the amendment speaks to the Continental Divide National Scenic Trail #440 in T 13N R7W Sections 15, 16, 21, and 22 as this trail crosses through Forest Plan N1 Management Area. This N1 area is a proposed Research Natural Area where the standard states that trails (motorized or non-motorized) will not be allowed. The CDNST was in existence in this location when the Forest Plan was signed; however the Plan did not acknowledge this and an amendment is needed now as part of this proposed action. Appendix I illustrates how the wording in the Forest Plan would change for Management Area N1 related to the CDNST.

For Management Area R1 the amendment speaks to the Helmville-Gould Trail #467 starting in T13N R7W Section 33 and ending in T13N R8W Section 33 as it crosses through and serves as the boundary of Forest Plan R1 Management Area. This R1 area is managed as undeveloped land suited for dispersed recreation. This amendment would need to exempt this portion of trail #467 in R1 Management Area to be managed as motorized. The 1986 Helena Forest Plan identified the Nevada Mountain Roadless area as non-motorized. Trail #467 was clearly located within the boundary. Nevertheless, motorized use was allowed on #467 prior to the Forest Plan and was allowed to continue. Subsequent special orders were signed by the forest supervisor to allow motorized use on Trail #467; however no amendment to the Forest Plan was completed. Appendix I illustrates how the wording in the Forest Plan would change for Management Area R1 related to the Helmville-Gould Trail.

Table 4. Typical levels for road closure, storage and decommissioning

Level	Typical Device (site-dependent)	Typical Treatment (as needed, depending on site)	National Forest System Road (NFSR) Status
Closure			
1	Gate	Blade; seed; fertilize; normal drainage using BMPs; treat noxious weeds	Remains as NFSR as either long-term or intermittent-term service with gate or other barrier
2	Gate, guardrail, concrete, earth barrier or re-contour intersection	Type III dip waterbars or outslope; scarify; seed; fertilize; treat noxious weeds; may scatter slash	
Storage			
3-SN	Re-contour intersection (obliterate the road entrance) or add rock/earth barrier as needed	No physical or weed treatment needed; naturally reclaimed and stabilized	Remains as NFSR as an intermittent-term stored service
3-S		Waterbar or outslope; remove corrugated metal pipes (CMPs or culverts) and restore watercourse; ditch relief pipes can remain with waterbars; lightly scarify; seed; treat noxious weeds	
Decommission			
3-DN	Re-contour intersection (obliterate road entrance) or add rock/earth barrier as needed	Naturally decommission (DN): No physical or weed treatment needed; naturally reclaimed and stabilized	Removed from NFSR by route status change to decommissioned; road no longer needed; monitor effectiveness
4		Waterbar, outslope or selectively re-contour; remove all CMPs and restore watercourse; rip 12-18 inches; seed; fertilize if necessary; treat noxious weeds; scatter slash on slopes	
5	Re-contour	Re-contour entire prism; remove all CMPs and restore watercourses; seed; fertilize if necessary; treat noxious weeds; scatter slash on slopes	
5-DN	Re-contour	Naturally decommission: roads are very overgrown and are of low watershed concern; however they still have a visible cut/fill slope and could be recontoured to restore them to their natural state	

Travel Plan Alternative 3

We developed alternative 3 to respond to the following significant issues: wildlife habitat and security, fisheries and water quality, and quality non-motorized trail system. It takes into account the need to minimize impacts based on input regarding water quality and fish habitat, wildlife security and wildlife habitat improvements, and enhanced non-motorized recreation opportunities while still providing for a motorized recreational experience. Features common to alternatives 2, 3, and 4 are described later in this chapter following the description of alternative 4. We provide maps of alternative 3 in appendix G and summaries of its components in table 5. Tabular comparisons between each of the alternatives are provided at the end of this chapter.

Consistent with the travel planning regulations at 36 CFR 212 Subpart B, we would designate the resulting available wheeled motorized access routes and areas on a motor vehicle use map. Public use of a motor vehicle other than in accordance with those designations would be prohibited as per 36 CFR 261.13.

Under alternative 3, we would allow wheeled motorized vehicle travel within 300 feet of the edge of designated system routes, including roads and trails (unless signed otherwise) for the purposes of dispersed camping (and parking associated with camping) as long as:

- No new permanent routes are created by this activity
- No damage to existing vegetation, soil, or water resources occurs
- Travel off-route does not cross streams
- Travel off-route does not traverse riparian or wet areas
- Recreationalists will use the most direct route to disperse camp
- Recreationalists must select their site by non-motorized means

Access to dispersed camping is identified as an acceptable use in the planning area under the 2001 Tri-State Decision and the 2005 Motorized Travel Rule, and we have observed that, in general, this has occurred within acceptable environmental limits. Where site-specific issues have occurred, we issued closures for resource protection. We have this tool when needed; therefore, we propose to continue this practice under alternative 3 and feel this is consistent with the 2001 Tri-State OHV Decision ; the 2005 Travel Planning Rule; Executive Order 11644 (Use of Off-Road Vehicles on Public Lands); the Helena Forest Plan and Forest Service Manual 7700 (Travel Management).

Under alternative 3 we would also allow parking safely next to the side of a motorized routewithin 30 feet from the edge of the route. Parking next to the road means a person could picnic, camp, bicycle, hike, or do any other legal recreational activity. Forest users would have the obligation to not impede normal traffic flow.

Table 5 reflects the miles for each type of use for alternative 3 in comparison to alternative 1 – no action. If alternative 3 were implemented:

- Approximately 144 miles of routes would no longer be available for public wheeled motorized use (302 miles of National Forest System routes would still be available and shown on the MVUM)
- Approximately 9 miles of motorized trails would no longer be available for this use (47 miles of motorized trails would be available)

- Approximately 87 miles of additional non-motorized trails would be designated (158 miles would be available)
- Approximately 3 miles of new motorized trail would be constructed
- Approximately 0.2 miles of new road would be constructed and approximately 0.5 miles of road would be reconstructed
- Approximately 31.5 miles of new non-motorized trail would be constructed (31 miles of this would be for new mountain bike trail construction)
- Of the original 92 miles acquired through land acquisition between 2006 and 2011, approximately 70 miles would be identified for closure, storage, or decommissioning
- Of the existing 60 miles of unclassified routes in the planning area, approximately 54 miles would be identified for closure, storage or decommissioning
- Approximately 76 miles of road would be stored (see table 4)
- Approximately 200 miles of road would be decommissioned (see table 4)
- Five trailheads and two parking areas would be designated

Table 5. Alternative 3: Miles of each type of use compared to alternative 1

Use code (corresponding designation on alternatives maps)[1]	Type of Use (corresponding designation on alternative maps)	Alternative 1 Existing Condition (miles)	Alternative 3 (miles)[2]
01-RES	Roads closed to motorized use yearlong (may include occasional administrative use)	57	32
01-RES-STO	Roads closed roads that are stored	0	20
01-STO	Open or seasonal roads that are stored	0	56
02-RES	Roads closed to motorized use 10/15 – 12/01	8	0
04-RES	Roads closed to motorized use 12/02– 5/15	2	2
06-RES	Roads closed to wheeled motorized use yearlong	104	96
09-RES & 10-RES	Roads closed to wheeled motorized use 10/15-6/30	116	0
11-RES & 12-RES	Roads closed to wheeled motorized use 9/1-6/30	16	74
CLOSED-AQ	Roads acquired in 2011 – closed to wheeled motorized use yearlong	16	0
CLOSED-LX	Roads acquired in 2009 – closed to wheeled motorized use yearlong	63	0
DECOM	Roads that would be decommissioned	0	200
M-07.00	Motorized Trail - vehicles less that 50" - no seasonal restrictions	31	0
M-08.00	Motorized Trail – vehicles 50 inches or less – closed 9/1-6/30	0	44
M-08.10	Motorized Trail - vehicles less than 50" - Closed 10/15-6/30	0	0
M-08.105	Motorized Trail - vehicles less than 50" - Closed 10/15-5/31	0	0

Use code (corresponding designation on alternatives maps)[1]	Type of Use (corresponding designation on alternative maps)	Alternative 1 Existing Condition (miles)	Alternative 3 (miles)[2]
M-10.00	Motorized Trail - single track - no seasonal restrictions	19	0
MT RECONSTRUCTION	Motorized trail relocated	0	0
MT NEW CONSTRUCTION	New motorized trail construction	0	3
NM & NOMTR NEW CONSTRUCTION	New non-motorized trail construction, including new mountain bike trail construction	0	31.5
NATURALLY RECLAIMED	Naturally decommissioned/reclaimed – not drivable	23	0
NM, NOMTR and NOMTR-FS	Non-motorized trail including new mountain bike trails	71	158
NM RECONSTRUCTION	Non-motorized trail relocated	0	0
OPEN-HWY LEGAL	Open highway legal vehicles - no seasonal restrictions	277	226
OPEN-LX	Roads acquired in 2009 – open to motorized use	13	0
ROAD NEW CONSTRUCTION	Road new construction	0	0.5
ROAD RECONSTRUCTION	Road relocated/reconstructed	0	0.50
UC-CLOSED	Unclassified road or trail – closed to wheeled motorized use	40	0
UC—M-07.00	Unclassified motorized trail - no seasonal restrictions	5	0
UC-OPEN	Unclassified road or trail – open to wheeled motorized use yearlong	12	0
UC-OPEN10	Unclassified road with seasonal restriction 10-RES, closed to wheeled motorized use from 10/15-6/30	2	0

1 open motorized routes, motorized routes closed yearlong and motorized routes closed seasonally may receive occasional administrative use

2 This column shows the resulting/total/cumulative routes available if the proposed changes are made; these are approximate and due to rounding and changes between categories and may not exactly match the narrative discussion

Under alternative 3, trails of interest in the planning area (CDNST, Helmville-Gould, and Stonewall) would be managed somewhat differently than they are currently (see appendix G for a map of these trail corridors and the types of uses that would change under alternative 3 and a summary by trail section in appendix C). The CDNST within the planning area would be managed primarily for non-motorized use; seasonal motorized use (closed 9/1-6/30) would be limited to approximately 1 mile of trail and the rest of the trail would be managed for non-motorized use. Flesher Pass to Stemple Pass would change from a motorcycles-only trail to a non-motorized trail and Stemple Pass to Marsh Creek would change from a motorized trail (open to vehicles 50 inches or less in width with no seasonal restrictions) to a non-motorized trail (over-snow vehicles allowed). Marsh Creek to Nevada Mountain would continue to have approximately 1 mile of motorized use. Approximately 4 miles of the CDNST would be located along a road. Mountain bike use would be allowed but would not be specifically promoted.

The Helmville Gould Trail would change as well and would also be managed for non-motorized use; motorized use would be prohibited. This trail would be designated a non-motorized trail (over-snow vehicles allowed) from its intersection with the CDNST to Dalton Mountain (see map in appendix G).

The Stonewall Trail would continue to be designated as a motorized trail (open to vehicles 50 inches or less in width) but it would be closed to wheeled use from September 1 – June 30 (there are currently no seasonal restrictions on this trail) (see map in appendix G).

Five trailheads and two parking areas would be designated under alternative 3 to facilitate road and trail changes. These are the same as those described for alternative 2. These designations would improve public safety (by providing a safe place for vehicle parking and turning around) and reduce resource damage by confining the boundaries of use):

Table 3 illustrates how this mountain bike trail system would be delineated with other types of uses.

This alternative proposes roads for closure, storage and decommissioning. For purposes of this analysis, we assume all roads proposed for storage under alternative 3 would be stored at the 3-S level and all roads proposed for decommissioning would be decommissioned at the 4 level. Table 4 illustrates what these terms means and the various closure levels for each category.

As can be seen from table 4, there would be changes to the existing condition if alternative 3 were implemented. In order to further understand how specific routes would change under this alternative; see the route-by-route accounting provided in appendix C, the maps provided in appendix G and summary tables at the end of this chapter.

Programmatic Forest Plan Amendments

Implementing alternative 3 would require a programmatic amendment to the Helena National Forest Plan regarding the standard for big game security index. The proposed programmatic plan amendment would establish a new standard for big game security. This standard would apply only to National Forest System lands within those portions of an elk herd unit that are within the Lincoln Ranger District, Helena National Forest administrative boundary. In the next section (following the description of travel plan alternative 4) and in appendix F, we describe in detail how the wording in the Forest Plan would change as part of this amendment.

There would also be a need for a Forest Plan amendment for the Continental Divide National Scenic Trail #440 in T 13N R7W Sections 15, 16, 21, and 22 as this trail crosses through Forest Plan N1 Management Area. This N1 area is a proposed Research Natural Area where the standard states that trails (motorized or non-motorized) will not be allowed. Appendix I illustrates how the wording in the Forest Plan would change for Management Area N1 related to the CDNST.

Travel Plan Alternative 4 – Preferred Alternative

We developed alternative 4 after the public comment period on the Draft EIS. It incorporates suggested corrections and suggested changes made by the public (as summarized at the beginning of this chapter and in appendix I) and additional internal discussion among the interdisciplinary team to achieve a balance between recreational/social resources and natural resource protection. Features common to alternative 2, alternative 3, and alternative 4 are described later in this chapter following the description of alternative 4.

We provide maps of alternative 4 in appendix G and summarize the components in table 6. Tabular comparisons between each of the alternatives are provided at the end of this chapter.

Consistent with the travel planning regulations at 36 CFR part 212 subpart B, we would designate the resulting available wheeled motorized access routes and areas on a motor vehicle use map and public use of a motor vehicle other than in accordance with those designations would be prohibited as per 36 CFR 261.13.

Under alternative 4, we would allow wheeled motorized vehicle travel within 300 feet from the edge of designated system routes, including roads and motorized trails (unless signed otherwise) for the purposes of dispersed camping (or parking associated with dispersed camping) as long as:

- No new permanent routes are created by this activity
- No damage to existing vegetation, soil, or water resources occurs
- Travel off-route does not cross streams
- Travel off-route does not traverse riparian or wet areas
- Recreationalists will use the most direct route to disperse camp
- Recreationalists must select their site by non-motorized means

Access to dispersed camping is identified as an acceptable use in the planning area under the 2001 Tri-State Decision and the 2005 Motorized Travel Rule, and we have observed that, in general, this has occurred within acceptable environmental limits. Where site-specific issues have occurred, we issued closures for resource protection. We have this tool available when needed; therefore, we propose to continue this practice under alternative 4. We feel this is consistent with the 2001 Tri-State OHV Decision ; the 2005 Travel Planning Rule; Executive Order 11644 (Use of Off-Road Vehicles on Public Lands); the Helena Forest Plan (1986) and Forest Service Manual 7700 (Travel Management). Many areas within 300 feet of an open route are already unsuitable for use due to terrain or vegetation limitations and the monitoring and enforcement of the 4 provisions for resource protection would ensure any adverse impacts are minimized.

Table 6 reflects the miles for each type of use for alternative 4 in comparison to alternative 1 – no action. If alternative 4 were implemented:

- Approximately 157 miles of routes would no longer be available for public wheeled motorized use (289 miles of National Forest System routes would still be available and shown on the MVUM)
- Approximately 7 miles of additional motorized trail would be designated (63 miles of motorized trails would be available)
- Approximately 59 miles of additional non-motorized trails would be designated, including new mountain bike trail construction (130 miles would be available)
- Approximately 4 miles of new motorized trail would be constructed and approximately 9 miles of existing motorized trail would be reconstructed/relocated

- Approximately 0.2 miles of new road would be constructed and approximately 0.6 miles of existing road would be reconstructed
- Approximately 21 miles of new non-motorized trail would be constructed (20 miles of this would be for new mountain bike trail construction) and approximately 3 miles of existing non-motorized trail would be reconstructed
- Of the original 92 miles of road acquired through land acquisition between 2006 and 2011, approximately 57 miles of road acquired through land exchange would be identified for storage or decommissioning
- Of the existing 60 miles of unclassified routes in the planning area, approximately 53 miles would be identified for closure or decommissioning
- Approximately 82 miles of road would be stored (see table 4)
- Approximately 212 miles of road would be decommissioned (see table 4)
- Seven trailheads and two parking areas would be designated

Table 6. Alternative 4: Miles of each type of use compared to alternative 1

Use code (corresponding designation on alternatives maps)[1]	Type of Use (corresponding designation on alternative maps)	Alternative 1 Existing Condition (miles)	Alternative 4 (miles)[2]
01-RES	Roads closed to motorized use yearlong	57	3
01-RES-STO	Closed roads that are stored	0	18
01-STO	Open or seasonal roads that are stored	0	65
02-RES	Roads closed to motorized use Oct 15 – December 1	8	0
04-RES	Roads closed to motorized use December 2 – May 15	2	2
06-RES	Roads closed to wheeled motorized use yearlong	104	126
09-RES & 10-RES	Roads closed to wheeled motorized use October 15 – June 30	116	51
11-RES & 12-RES	Roads closed to wheeled motorized use September 1 – June 30	16	35
CLOSED-AQ	Roads acquired in 2011 - closed	16	0
CLOSED-LX	Roads acquired in 2009 - closed	63	0
DECOM	Roads that would be decommissioned	0	212
M-07.00	Motorized Trail - vehicles less that 50" - no seasonal restrictions	30	1
M-08.00	Motorized Trail – vehicles 50 inches or less – closed 9/1-6/30	0	12
M-08.10	Motorized Trail – vehicles 50 inches or less – closed 10/15-6/30	0	20
M-08.105	Motorized Trail – vehicles 50 inches or less – closed 10/15-5/31	0	19
M-10.00	Motorized Trail - single track - no seasonal restrictions	19	0
MT NEW CONSTRUCTION	New motorized trail construction	0	4
MT RECONSTRUCTION	Motorized trail relocated	0	9

Use code (corresponding designation on alternatives maps)[1]	Type of Use (corresponding designation on alternative maps)	Alternative 1 Existing Condition (miles)	Alternative 4 (miles)[2]
NATURALLY RECLAIMED	Roads naturally decommissioned/reclaimed – not drivable	23	0
NM & NOMTR NEW CONSTRUCTION	New non-motorized trail construction, including new mountain bike trail construction	0	21
NM RECONSTRUCTION	Non-motorized trail relocated	0	3
NM, NOMTR & NOMTR-FS	Non-motorized trail	71	106
OPEN-HWY LEGAL	Roads open to highway legal vehicles - no seasonal restrictions	277	202
OPEN-LX	Roads acquired in 2009 - open	13	0
ROAD NEW CONSTRUCTION	Road new construction	0	0.20
ROAD RECONSTRUCTION	Road relocated/reconstructed	0	0.50
UC-CLOSED	Unclassified road or trail – closed	40	0
UC—M-07.00	Unclassified motorized trail - no seasonal restrictions	5	0
UC-M-11.00	Unclassified motorized trail – season restriction 11-RES closed 9/1-6/30	1	0
UC-OPEN	Unclassified road or trail - open	12	0
UC-OPEN10	Unclassified road seasonal restriction 10-RES, closed 10/15-6/30	2	0

1 open motorized routes, motorized routes closed yearlong and motorized routes closed seasonally may receive occasional administrative use

2 This column shows the resulting/total/cumulative routes available if the proposed changes are made; these are approximate mileage figures and due to rounding and changes between categories, may not exactly match the narrative discussion.

Under alternative 4, trails of interest in the planning area (CDNST, Helmville-Gould, and Stonewall) would be managed as described below (see appendix G for a map of these trail corridors and the types of uses that would change under alternative 4, and a summary by trail section in appendix C).

The CDNST within the planning area would be managed primarily for non-motorized use; approximately 3 miles of non-motorized trail would be reconstructed and approximately 1 mile of trail would be managed for seasonal motorized use (closed 10/15-6/30); less than 0.5 miles would be open to motorized use with no restrictions. Flesher Pass to Stemple Pass would change from a single-track motorized trail to a non-motorized trail. Stemple Pass to Marsh Creek would change from a motorized trail (open to vehicles 50 inches or less in width with no seasonal restrictions) to a non-motorized trail with some trail reconstruction. Marsh Creek to Nevada Mountain would continue to have approximately 1 mile of motorized use. Approximately 0.5 miles of the CDNST would be located along a road. Mountain bike use would be allowed but would not be specifically promoted.

The Helmville-Gould Trail would continue to be managed for motorized use for vehicles 50 inches or less. Seasonal motorized use would be allowed from its intersection with the CDNST to Dalton Mountain. The trail would be closed to motorized use from October 15 - June 30 annually (see map in appendix G). To address layout sustainability, user safety, and Forest Service OHV trail standards, some relocation and reconstruction would occur on this trail. This would somewhat lengthen the total route and provide continuous OHV access along its length.

The Stonewall Trail would continue to be designated as a motorized trail. It would change from having no seasonal restrictions to being closed to wheeled use from October 15 – June 30 (see map in appendix G). Like the Helmville-Gould, it would also have some segments relocated and reconstructed to address layout sustainability, user safety, and Forest Service OHV trail standards. This relocation would also provide improved vista opportunities.

Overall, alternative 4 would increase (via new construction or changing existing route designations) the designated motorized trail system by approximately 7 miles to a total of 63 miles. The designated non-motorized trail system would also increase (via new construction or changing existing route designations)by approximately 59 miles, to a total of 130 miles and a mountain bike trail system would be designated in the planning area (see appendix G for a map of proposed motorized, non-motorized and mountain bike routes and appendix C for tabular summaries. Table 6 illustrates how this mountain bike trail system would be delineated with other types of uses.

Seven trailheads and two parking areas would be designated under alternative 4 to facilitate road and trail changes. These are the same as those described for alternatives 2 and 3 in addition to the following (see maps in appendix G for more details). These designations would improve public safety (by providing a safe place for vehicle parking and turning around) and reduce resource damage by confining the boundaries of use):

- Trailhead along 1821-B1-NEW in T15N R8W Section 33
- Trailhead along 485-D1 in T13N R7W, Section 34

This alternative proposes roads for closure, storage and decommissioning. For purposes of this analysis, we assume all roads proposed for storage under alternative 4 would be stored at the 3-S level and all roads proposed for decommissioning would be decommissioned at the 4 level. Table 4 illustrates what these terms means and the various closure levels for each category.

As is displayed in table 6, there would be changes to the existing condition if alternative 4 were implemented. In order to further understand how specific routes would change under this alternative; see the route-by-route accounting provided in appendix C, the maps provided in appendix G and summary tables at the end of this chapter.

Programmatic Forest Plan Amendments

Like alternative 2 and alternative 3, implementing alternative 4 would require a programmatic amendment to the Helena National Forest Plan regarding the standard for big game security index. The proposed programmatic plan amendment would establish a new standard for big game security. This standard would apply only to National Forest System lands within those portions of an elk herd unit that are within the Lincoln Ranger District, Helena National Forest administrative boundary. In the next section and also in appendix F, we describe in detail how the wording in the Forest Plan would change as part of this amendment.

There would also be a need for a programmatic Forest Plan amendment to address Management Areas N1 and R1. For Management Area N1 the amendment speaks to the Continental Divide National Scenic Trail #440 in T 13N R7W Sections 15, 16, 21, and 22 as this trail crosses through Forest Plan N1 Management Area. This N1 area is a proposed Research Natural Area where the standard states that trails (motorized or non-motorized) will not be allowed. The CDNST was in existence in this location when the Forest Plan was signed; however the Plan did not acknowledge this and an amendment is needed now as part of this proposed action. Appendix I illustrates how the wording in the Forest Plan would change for Management Area N1 related to the CDNST.

For Management Area R1 the amendment speaks to the Helmville-Gould Trail #467 starting in T13N R7W Section 33 and ending in T13N R8W Section 33 as it crosses through and serves as the boundary of Forest Plan R1 Management Area. This R1 area is managed as unroaded and undeveloped land for semi-primitive non-motorized recreation. This amendment would need to exempt this portion of trail #467 in R1 Management Area to be managed as motorized. The 1986 Helena Forest Plan identified the Nevada Mountain Roadless area as non-motorized. Trail #467 was clearly located within the boundary. Nevertheless, motorized use was allowed on #467 prior to the Forest Plan and was allowed to continue. Subsequent special orders were signed by the forest supervisor to allow motorized use on Trail #467; however no amendment to the forest plan was completed. Appendix I illustrates how the wording in the Forest Plan would change for Management Area R1 related to the Helmville-Gould Trail.

Forest Plan Amendment for Big Game Security Index – Forest Plan Amendment Alternatives A and B

Forest Plan Amendment Alternative A - Retain the Existing Forest Plan Big Game Security Standard 4(a)

Alternative A - No Action would retain the existing big game security Forest Plan standard. In this case, ‘no action’ means that we would not amend the Forest Plan and the existing Forestwide Standard 4(a) for big game security would not be changed. The exact language of the current standard is as follows and this would remain as written under forest plan amendment alternative A:

Forestwide Standard Big Game 4(a) (HFP pp. II/17 – II/18) **–** *Implement an aggressive road management program to maintain or improve big game security.*

a. *Road management will be implemented to at least maintain big game habitat capability and hunting opportunity. To provide for a first week bull elk harvest that does not exceed 40 percent of the total bull harvest, roads will be managed during the general big game hunting season to maintain open road densities with the following limits.*

Forest Plan Big Game Security Index		
Existing Percent Hiding Cover (1)	Existing Percent Hiding Cover (2)	Max Open Road Density mi/mi^2
56	80	2.4
49	70	1.9
42	60	1.2
35	50	0.1

(1) Forest Service definition - a timber stand which conceals 90 percent or more of a standing elk at 200 feet.

Forest Plan Big Game Security Index
(2) MFWP definition - a stand of coniferous trees having a crown closure of greater than 40 percent.

The existing hiding cover to open road density ratio should be determined over a large geographic area, such as a timber sale analysis area, a third order drainage, or an elk herd unit.

Forest Plan Amendment Alternative B – Change the Forest Plan Big Game Security Standard (Preferred Alternative)

Along with the four travel plan action alternatives (alternatives 2, 3 and 4), we are also proposing to programmatically amend the Helena National Forest Plan regarding the standard for the big game security index. With this proposal (Forest Plan amendment alternative B), the Forest Plan Standard 4(a) (described briefly in appendix A and in detail in appendix F) would be replaced with the following language in order to establish a new big game security standard. This standard applies only to National Forest System lands within those portions of an elk herd unit that are within the Lincoln Ranger District, Helena National Forest administrative boundary.

Standard

Road management will be implemented to maintain or improve big game security[1] and hunting opportunity.

This standard applies only to the National Forest System lands within those portions of an elk herd unit that are within the Lincoln Ranger District, Helena National Forest administrative boundary.

***Public Motorized Use**: Public motorized use will be managed during the hunting season (from 9/1 – 12/1) to maintain elk security at the following levels:*

Table 7: Elk Security Percentages per Elk Herd Unit.

Percentage of Elk Security within that Portion of an Elk Herd Unit within the Lincoln Ranger District Administrative Boundary by Travel Plan Alternative				
Herd Unit	**Alternative 1 Security (Percent)**	**Alternative 2 Security (Percent)**	**Alternative 3 Security (Percent)**	**Alternative 4 Security (Percent)**
Arrastra	57	55	57	57
Beaver Creek	41	47	52	48
Flesher Pass	27	32	49	42
Keep Cool	36	46	60	52
Landers	84	84	84	84
Nevada	44	47	59	52
Ogden	21	23	41	24
Poorman	12	15	40	32

***Other Use:** Administrative use[2] for travel on routes that are closed to public motorized use is permitted subject to existing authorization procedures (i.e. variances approved by line officers are required prior to use of motorized routes closed to the public).*

Temporary reductions associated with management activities in security blocks between 9/1 and 12/1 are allowed as long as impacts to elk or elk security are mitigated[3] at the project level.

Temporary reductions will be evaluated and effects analyzed (including cumulative effects) at the project level and reviewed by a journey level wildlife biologist. It is at this scale and time when project design features and/or mitigations would be applied to ensure that impacts to elk or elk security during hunting season are addressed and reduced over the implementation timeline of the project. Temporary reductions are managed at the project scale and at the herd unit (or across herd units where security blocks cross into one or more herd units) to ensure big game security during the 9/1 – 12/1 hunting season is maintained or improved over the long term.

Exceptions to the Standard: Emergency situations are not subject to this standard.

Definitions

[1]*Security is defined as a proportion of an elk herd unit within the administrative boundary of the Lincoln Ranger District that consists of an area of at least 1000 acres in size that is at least ½ mile from a motorized route open to the public between 9/1 and 12/1. Security blocks do not include constrictions less than or equal to ½ mile in width. Security is calculated across all ownerships within the administrative boundary.*

[2]*Administrative use for travel on motorized routes is defined as vehicle use associated with management activities or projects on National Forest land administered by the Forest Service or under authorization of the Forest Service. Management Activities include but are not limited to, law enforcement, timber harvest, reforestation, cultural treatments, prescribed fire, watershed restoration, wildlife and fish habitat improvement, private land access, allotment management activities, and mineral exploration and development that occur on National Forest land administered by the Forest Service or under authorization of the Forest Service.*

[3]*Mitigation is defined as design elements and/or constraints applied to project level activities that reduce project impacts on elk or elk security. Mitigation measures may include but are not limited to one or more of the following: timing restrictions of activities in security blocks, confining activities to one security block at a time, completing as much of the preparatory work as possible prior to the hunting season, reducing the size/acres/intensity/magnitude of the activity, allowing activities that benefit elk (particularly in management areas with a wildlife emphasis), limiting activities to one season, temporarily closing roads open to the public to compensate for the activity, etc.*

Goal

Maintain or, where opportunities arise, improve big game security in those portions of an elk herd unit within the administrative boundary of the Lincoln Ranger District during the 9/1 – 12/1 hunting season where security is less than 50%. Maintain big game security in those portions of an elk herd unit within the administrative boundary of the Lincoln Ranger District between 9/1 and 12/1 where security is greater than or equal to 50%.

Forest Plan amendment alternative B could apply to any of the three travel plan action alternatives. For purposes of comparison, we also evaluate and consider in detail retaining our existing Forest Plan Standard 4a for the big game security index; this is Forest Plan amendment alternative A. It could also apply to any of the three travel plan action alternatives selected. Forest Plan amendment alternative B is our preferred alternative. Both of these alternatives are described in detail in appendix F, along with the rationale for the amendment.

A travel plan decision and a big game security forest plan amendment decision would be made via Records of Decision for this project and would identify which travel plan alternative (1, 2, 3 or 4) is selected for implementation and which big game security forest plan amendment alternative (A or B) is selected for implementation.

Discussion

One of the objectives of the Blackfoot Travel Plan is to avoid imposing dated management direction contained in the Helena Forest Plan (USDA Forest Service 1986, as amended) on the road and trail system of the Blackfoot landscape (see Purpose and Need for Action section of chapter 1). Appendix F provides more detail and discussion on this proposed amendment.

The Blackfoot travel plan is designed to maintain a road and trail system that provides the public with reasonable access to the National Forest and allows the Forest Service to manage the landscape with some efficiency, while, at the same time, sheltering as much of the wildlife resource as possible from problems generated by motor vehicles and disruptive human presence in general. Part of the process of balancing the need for road access with the security requirements of big game animals entails developing a system of habitat assessment and management guidance that can accurately depict the security status of elk in a given area and appropriately address any problems detected. Experience with the Forest Plan over the last couple decades has led Helena National Forest wildlife biologists to conclude that elk security standards in the Plan [particularly big game standard 4(a) (USDA 1986, p. II/17 – II/18)] do not accurately reflect the habitat needs of elk during the hunting season and have required road closures that restrict travel but often do not improve elk security. In particular:

- Forest Plan Standard #4(a) (the big game security index would conclude that six of the eight elk herd units in the Blackfoot landscape are deficient in elk security to the point that they do not meet the standard.
- Despite the situation that six out of 8 EHUs do not meet Forest Plan Standard 4(a), Elk numbers have been steadily increasing since the crafting of the Forest Plan in 1986. Aerial survey data collected by MFWP staff through 2013 indicate that there are at least 10,727 elk within the hunting districts that overlap with the Helena National Forest. This is well above the 6,400 benchmark identified in the Forest Plan.
- Montana Fish, Wildlife and Parks' data indicate that elk populations in the Blackfoot landscape are either at or near population objectives of the Montana Elk Plan (2004) for the last several years for most of the Hunting Districts (HDs); or that management challenges are only partially habitat related. That is, elk security is adequate in many HDs. The current Forest Plan standard is not an accurate indicator of elk security.
- In spite of the fact that the travel plan alternatives propose to close several miles of roads to vehicle access during the hunting season, the big game security standard #4(a) indicates that there would be no improvement in elk security in any unit.
- In several herd units, not even the closure of all roads managed by the Forest would be enough to meet standard #4(a). In another herd unit approximately 36 miles of roads would need to be closed if the standard is to be met. These requirements are impractical on a grand scale. And the HNF is put in the position of never being able to meet standard #4(a) in these herd units in the foreseeable future (even while elk continue to thrive).
- The alternative methodology proposed in the Forest Plan amendment—the percentage of an elk herd unit occupied by elk security areas - indicates that overall elk security in the

Blackfoot landscape is adequate. This measure of security, unlike the Forest Plan standard, is sensitive to changes in open road configuration—pointing out where management is effective and where it needs to improve.

- ♦ By introducing reasonably measurable criteria as part of the formula for gauging the level of security needed in a given herd unit, the new standard provides a more realistic means of guiding travel management on the Forest.

In conclusion, Forest Plan Standard #4(a) inaccurately depicts the nature of elk security in the Blackfoot landscape, is insensitive to changing road densities, and places unnecessary and impractical constraints on travel management. Meanwhile, the more recently developed elk security area methodology provides a reasonably accurate picture of elk security across the landscape, is responsive to proposed changes in open motorized route patterns, and correctly directs management to areas that need further attention.

Although this amendment eliminates cover measurements as part of the determination of elk security, it does not change other elk or big game related standards relative to the analysis and maintenance of cover, notably Big Game Standards 1, 2, 3, and 5. Big Game Standards 4b thru 4h and 6 regarding road management activities are also still in effect.

Features Common to the Travel Plan Action Alternatives

Motorized Use within 300 Feet from a Designated Route

The 2001 Tri-State OHV Decision allowed off-route vehicle camping within 300 feet of roads and trails; but, required visitors to select camp sites by non-motorized means and access these campsites by the most direct route causing the least damage. These uses would continue to be allowed under alternative 1.

Under alternatives 2, 3 and 4, we will continue to allow parking safely adjacent to a designated road or motorized trail within 30 feet from the edge of the road or motorized trail. In addition, wheeled motorized vehicle travel for dispersed camping or parking associated with dispersed camping will be allowed within 300 feet of designated system routes, including roads and trails (unless signed otherwise or specifically closed) as long as:

- ♦ No new permanent routes are created by this activity
- ♦ No damage to existing vegetation, soil, or water resources occurs
- ♦ Travel off-route does not cross streams
- ♦ Travel off-route does not traverse riparian or wet areas
- ♦ Recreationalists will use the most direct route to disperse camp
- ♦ Recreationalists must select their site by non-motorized means

Motorized Route Management

Under alternatives 2, 3, and 4 we would:

- Restrict public wheeled motorized use (where not already restricted), to designated routes only (36 CFR 212.50(a)). If other unclassified routes are discovered that are not currently captured in this analysis (and shown on maps in appendix G and included in summary tables in appendix C), they would be considered non-System roads and would not be open for motorized use.

- Designate all motorized trails for vehicles 50 inches wide or less, including motorcycles, unless specified otherwise for a particular trail in the description of the alternative
- Permit tracked vehicles as long as they meet the size class shown on the motor vehicle use map.
- Post signs on the ground once a decision is made in order to clarify changes to the transportation system.
- Monitor road closure effectiveness for resource concerns and resource protection.
- Notify the public of any temporary closures through news releases and signing.
- Consider the appropriateness of motorized mixed use (designation of an NFS road for use by both highway-legal and non-highway-legal motor vehicles) following the selection of an alternative in the record of decision. A site-specific analysis of the suitability of routes for mixed motorized use is not part of this analysis. The Forest Engineer would perform an engineering analysis on all roads under consideration to determine the practicality and feasibility of allowing motorized mixed use. The primary consideration during these evaluations is safety, including speed, site distance, and safety for loading and unloading vehicles. Motorized mixed use would be studied on a case by case basis and implemented over time as conditions of the engineering analysis are met. We anticipate that this motorized mixed use analysis may be conducted prior to the issuance of the MVUM or used in any subsequent annual updates to the MVUM upon completion.
- A motor vehicle use map (MVUM) would be created as a result of selecting alternatives 2, 3 or 4 and would supplement the information provided by the Forest Visitor Map. The MVUM would display roads, trails and areas designated for motor vehicle use by vehicle class and time of year. The MVUM Production Guide (USDA Forest Service 2007) would be used as a guide when producing this map. The Forest Visitor Map would provide information on non-motorized routes and other information not directly related to motorized vehicle use.

Road Storage and Decommissioning

Road closure methods (including storage and decommissioning levels) are described in table 4. For purposes of this analysis, we assume all roads proposed for storage under any of the action alternatives would be stored at the 3-S level and all roads proposed for decommissioning would be decommissioned at the 4 level. We have proposed storage for some roads instead of decommissioning for the following reason:

- When it is likely we would need the road in 10 – 20 years for access to suitable timber lands as identified in the Forest Plan or potential needs for access to mining claims, private land, or some other similar situation.

Stored roads would not be open for administrative use. Stored roads may not be useable without work, such as re-grading, drainage improvements and replacement of culverts. If a large fire occurred and a stored road was necessary for immediate access, we would take that road out of storage and use it for that purpose and then store the road again after the fire. Some mining-claim access roads are proposed for storage but only if there is no current plan of operation for that mine, meaning there are no immediate and anticipated need for access. However, if a plan of operation were submitted, we would undertake additional NEPA analysis to evaluate this action and determine if any stored roads should be reopened.

In alternatives 2, 3, and 4 we identified many of the unclassified roads acquired through the land acquisition process for storage as opposed to decommissioning to keep options open for long-term resource management.

The routes being proposed for storage would provide effective closures for grizzly bears north of the highway. On the Lincoln Ranger District, the entire area north of Highway 200 is within the Northern Continental Divide Ecosystem (NCDE) Grizzly Bear Recovery Zone. The Interagency Grizzly Bear Committee manages habitat within the NCDE and guidelines have been developed to address open and total route densities, and secure habitat. Secure habitat, also referred to as core area, is defined as areas “free of motorized access during the non-denning period.” To satisfy the requirements of secure habitat, road closures must effectively prevent motorized access. As defined, gates do not constitute “effective closures,” however, entrance obliterations do. Therefore, the storage classification would count as an effective closure only if the first 1/4 mile of the road was ripped and berms put in place.

Monitoring, Maintenance and Enforcement

Once a decision is made on the travel plan via the record of decision, the implementation phase would begin. We would develop an implementation plan that would outline and prioritize the steps necessary to create the MVUM and associated actions; we would set priorities for road and trail treatments (decommissioning or storage, construction, reconstruction, or closure actions, etc.) would occur in the first phases of implementation or in subsequent phases. These priorities have not been developed but would occur after finalization of this plan. We anticipate the implementation would be based on areas of highest resource concern (e.g. Bull trout and critical habitat in the Blackfoot River, and its tributaries, Poorman Creek and Copper Creek, as described in the Draft Recovery Plan (USDI FWS 2005); watersheds that contain sediment-impaired streams (and are listed on the Montana 303(d) list) to address Restoration Plans for the Middle Blackfoot-Nevada Creek TMDL and the Blackfoot Headwaters TMDL; roads or trails on sensitive soil types, and storage and decommissioning in grizzly bear areas; and possibly areas with high recreational needs. An interdisciplinary approach would be used to develop and prioritize this plan, once an alternative is selected for implementation.

Effectiveness monitoring would occur, based on available resources. Highest priority would be ensuring allowed, wheeled, motorized vehicle travel—off-road but within 300 feet of the edge of designated system routes, including roads and trails—is not:

- Creating any new permanent routes
- Damaging existing vegetation, soil, or water resources
- Crossing streams, riparian or wet areas

While not a comprehensive survey, watershed crew members conducting road surveys for this planning effort and gathered data on some dispersed recreation sites during this survey (Coleman 2014). We will build on this effort once an alternative is selected for implementation. This effort would be used to assess compliance with the above criteria and ensure they are being met, or recommend closures where necessary.

We would adhere to the following direction from Forest Service Manual 7710 (7716.51 – Temporary Emergency Closures):

1. If the responsible official determines that motor vehicle use on an NFS road, an NFS trail, or in an area on NFS lands is directly causing or will directly cause considerable adverse effects on public safety, soil, vegetation, wildlife habitat, or cultural resources associated with that road, trail, or area, the responsible official shall immediately close that road, trail, or area to motor vehicle use (36 CFR 212.52(b)(2)).

2. Temporary, emergency closures must remain in effect until the responsible official determines that:

   a. The adverse effects have been mitigated (that is, reduced to the point where they are not considerable adverse effects) or eliminated; and

   b. Measures have been implemented to prevent future recurrence (36 CFR 212.52(b)(2)).

Education regarding the MVUM would necessarily be intensive in the early stages of implementation; but would reduce over time as the public becomes more familiar with the new regulations on the Forest.

Other Forest Plan Programmatic Amendments

As stated for alternatives 2, 3 and 4 in their respective alternative descriptions (and in table s- 1 and table 8), there would be a need for a programmatic Forest Plan amendment related to trails within the N1 (research natural areas) and R1 (undeveloped land for dispersed recreation) management areas.

The N1 management area (research natural areas) identifies the following standard for recreation. “Dispersed recreation facilities, such as trails or trailhead developments will not be allowed”. Currently a segment of the CDNST #440 passes through the N1 management area near Granite Butte. The R1 management area (Nevada Mountain Roadless Area) identifies that no motor vehicles would be allowed. The Helmville-Gould Trail #467 crosses through and serves as a boundary for this management area, and is currently managed as a motorized trail.

Appendix I also includes a description of how the specific language in the Forest Plan for these management areas would change under alternative 2, 3, or 4.

Project Design Features

We developed the following project design features and mitigation measures to be used as part of all of the action alternatives. These features were developed to reduce or eliminate adverse impacts from project activities, and are incorporated as an integrated part of alternatives 2, 3 and 4. Project design features are based upon standard practices and operating procedures that have been employed and proved effective in similar circumstances and conditions. Project design features are non-discretionary once approved in a decision. Project design features do not apply to alternative 1- no action because no project activities are proposed under this alternative; no changes would be made to the existing system of roads and trails in the planning area under alternative 1. However, continuing current management under alternative 1 would include the use of standard operating procedures and best management practices for routine road and trail maintenance and other routine activities as part of managing the current transportation system.

Forest Service National Best management Practices for Water Quality Management on National Forest System Lands, Volume 1 National Core BMP Technical Guide (BMPs, USDA Forest

Service 2012) applicable to road and trail management would be implemented under any of the action alternatives; these are available in the project record and are an integral part of implementation for any of the action alternatives.

Hydrology and Soils

1. For road location and design, all practical BMPs from the BMP Technical Guide section *Road-2. Road Location and Design* would be implemented.
2. For road construction or reconstruction, all practical BMPs from the BMP Technical Guide section *Road-3. Road Construction and Reconstruction* would be implemented. (e.g., use properly-sized culverts, locate on uplands, avoid or minimize stream crossings, stabilize cut and fill slopes, control erosion and sedimentation).
3. For road operations and maintenance, all practical BMPs from the BMP Technical Guide section *Road-4. Road Operations and Maintenance* would be implemented.
4. For road storage and decommissioning, all practical BMPs from the BMP Technical Guide section *Road-5. Road Storage and Decommissioning* would be implemented. Roads placed in storage or decommissioned would effectively restore the natural watercourse by removing culverts and pulling stream banks back to a natural gradient.
5. For stream crossings on open roads that are constructed or reconstructed, all practical BMPs from the BMP Technical Guide section *Road-6. Stream Crossings* would be implemented.
6. Any stream crossing proposed for restoration would have their channels and crossing sites reshaped to pass expected flows. Streambed materials would be replaced to a particle size distribution suitable for the site and floodplain function would be restored.
7. Implement and monitor applicable best management practices on roads that are stored or decommissioned or for implementation of new road or trail construction or reconstruction.
8. All required permits would be obtained prior to project implementation, and followed during implementation. Potentially required permits include Clean Water Act section 404 permit, the Montana Stream Protection Act (SPA) 124 permit as well as the Montana Department of Environmental Quality 318 (turbidity) permit.
9. Dispersed camping activities and other dispersed use recreation authorized for this planning effort would incorporate all practical BMPs from the BMP Technical Guide section *Rec-3. Dispersed Use Recreation. This* use would be monitored for adverse effects on water quality and riparian resources and changes implemented if needed.
10. Construction, reconstruction and maintenance of any motorized and non-motorized trails would incorporate all practical BMPs from the BMP Technical Guide section *Rec-4. Motorized and Non-motorized Trails*. If construction for new trails occurs adjacent to, or across any streams, appropriate methods to control risk of sediment delivery to streams would be used (e.g., silt fencing, straw waddles).
11. Areas of decomposed granite soil would be identified and erosion control measures planned prior to ground disturbing activities (Forest Plan page II-26) associated with storage, decommissioning or new road or trail construction. Best management practices to reduce soil erosion would be applied.
12. A sediment control plan would be developed during the implementation phase for this planning decision; this is a standard best management practice that would be followed. Wherever possible, watersheds that contain sediment-impaired streams (and are listed on the

Montana 303(d) list to address Restoration Plans for the Middle Blackfoot-Nevada Creek TMDL and the Blackfoot Headwaters TMDL) would be given priority for road storage and decommissioning.

13. Monitoring, maintenance and enforcement would occur under any of the action alternatives, particularly to ensure that motorized use within 300 feet of roads would not result in adverse resource impacts, including impacts to water quality or riparian areas. One area, at the top of the Sandbar area, would receive particular attention. Additional signage or specific area rehabilitation would be considered and implemented in this area, as needed.

Heritage

14. Any areas of proposed new ground disturbance (resulting from road and trail closures or new construction) would be reviewed for cultural resources to ensure activities comply with NEPA, the Forest Plan and Section 106 of the National Historic Preservation Act. Heritage resource protective measures may be prescribed as needed and would be incorporated prior to implementation. A phased approach under the Heritage Programmatic Agreement (PA) with the Montana State Historic Preservation Office (MT SHPO) has been consulted on and would be implemented; this will be described in more detail in the Record of Decision.

15. Identified heritage properties that occur within 600 feet of roads in the Blackfoot planning area that are closed, stored, decommissioned or planned for other ground disturbing treatment would be periodically revisited, monitored, and documented.

16. Protection measures may include, but are not limited to, seasonal and permanent route or area closures (special orders); designated routes and dispersed camping spots (away from cultural resources); hardening of cultural resources (e.g., bury the road bed with topsoil as opposed to ripping up the tread, and the archaeological deposit); signage; and data recovery (see FSM 2364.35 and 2364.36).

Minerals

17. Road access to currently-permitted mining projects (see minerals section of chapter 3) would be reviewed with mining claimants following alternative selection to ensure adequate access.

Aquatic Species and Habitat

18. Any activities planned in RHCAs (within 300 feet on either side of fish-bearing streams; 150 feet on either side of perennial non-fish bearing streams; and 50-100 feet on either side of intermittent streams) would adhere to all INFISH standards and guidelines for roads and recreation management, as described in detail in Forest Plan Amendment 14 and summarized in FEIS appendix A.

19. Installation, removal or replacement of any culverts or other in-stream work would only occur after July 15 for streams with westslope cutthroat trout (see aquatic habitat and fish report for a list of affected watersheds)

20. Installation, removal or replacement of any culverts or other in-stream work would only occur between May 15 and September 1 for streams with just bull trout (see aquatic habitat and fish report for a list of affected watersheds)

21. Installation, removal or replacement of any culverts or other in-stream work would only occur between July 15 and September 1 for streams with both bull trout and westslope cutthroat trout (see aquatic habitat and fish report for a list of affected watersheds)

22. The planning area culvert/fish passage inventory and culvert/flood risk inventory would be reviewed and updated as needed to ensure any culvert work uses the best available information.
23. Road maintenance activities within 300 feet of perennial streams or scoured channels, and adjacent to or upstream of known or potential bull trout spawning and rearing areas, would follow requirements of the Programmatic Biological Assessment For Road Maintenance for Bull Trout (USDI BLM and USDA Forest Service 1999)
24. Road closure, storage and decommissioning activities would be conducted to ensure that adverse impacts to bull trout are minimized. These mitigation measures are outlined in the Biological Assessment of Road Related Action on Western Montana’s Federal Lands that are Likely to Adversely Affect Bull Trout (USDA Forest Service and USDI BLM 2007), and in the project-specific Biological Assessment currently being prepared for this project.
25. Any reasonable and prudent measures or other mitigation measures developed in consultation with the US Fish and Wildlife Service during consultation would be incorporated and documented in the Record of Decision.
26. Surveys on stream reaches where pearlshell habitat is projected to be present by the Natural Heritage Program personnel in Montana will be conducted prior to any ground disturbing activities. Priority for survey should be directed first toward drainages where habitat conditions are suspected to be poor (as measured by sediment levels in stream substrates) to identify sites where emphasis should be placed on sediment control, habitat restoration, or even relocation of mussels. Importantly, coordination with landowners and the State should occur so surveys could be conducted on lands of other ownership where mussel habitat is projected to be present. Use the results of these survey efforts to determine if any additional protection measures for pearlshell mussels should be taken during implementation of this travel plan.
27. Existing fuelwood cutting areas, and any that may be allowed along open roads, particularly those in the Copper Creek drainage, would be monitored to ensure cumulative impacts to streams are minimized, to ensure compliance with INFISH and the bull trout conservation strategy. The existing 100-foot no-cut buffer zone along this creek would be monitored and this width increased if monitoring results indicate adverse impacts are occurring

Noxious Weeds

28. Incorporate all relevant guidance from FSM 2081.2 and the Environmental Protection Measures from the Helena National Forest Weed FEIS and accompanying Record of Decision when implementing road closure, storage or decommissioning and new construction.
29. The following Best Management Practices (BMPs) are required by Forest Service Manual 2081.2 - Prevention and Control Measures (FSM 2080).

    - **Roads - Required Objectives and Associated Practices.**

      (1) Incorporate weed prevention into road layout, design, and alternative evaluation. Environmental analysis for road construction and reconstruction will include weed risk assessment.

      (2) Remove the seed source that could be picked up by passing vehicles and limit seed transport in new and reconstruction areas.

(a) Remove mud, dirt, and plant parts from all off road equipment before moving into planning area. Cleaning must occur off National Forest lands. This does not apply to service vehicles that will stay on the designated roadway, traveling frequently in and out of the planning area.

(b) Clean equipment prior to leaving the project site, if operating in areas infested with new invaders as determined by the Forest Weed Specialist. Reference Contract Provision C/CT 6.626.

(3) Re-establish vegetation on bare ground due to construction and reconstruction activity to minimize weed spread.

(a) Revegetate disturbed soil, except the travel way on surfaced roads, in a manner that optimizes plant establishment for that specific site, unless ongoing disturbance at the site will prevent weed establishment. Use native material where appropriate and available. Use a seed mix that includes fast, early season species to provide quick, dense revegetation. To avoid weed contaminated seed, each lot must be tested by a certified seed laboratory against all State noxious weed lists and documentation of the seed inspection test provided.

(b) Use local seeding guidelines for detailed procedures and appropriate mixes. Use native material where appropriate and available. Revegetation may include planting, seeding, fertilization, and weed-free mulching as indicated by local prescriptions.

(c) Monitor and evaluate success of revegetation in relation to project plan. Repeat as indicated by local prescriptions.

(4) Any borrow pits necessary for gravel or fill material would not be used if new weed species/invaders, defined by the Forest Weed Specialist, are found on site. The pit would be treated for weed control and monitored prior to use.

(5) Minimize sources of weed seed in areas not yet revegetated. If straw is used for road stabilization and erosion control, it must be certified weed-free and weed-seed free.

(6) Minimize roadside sources of weed seed that could be transported to other areas during maintenance.

(a) Look for priority weed species during road maintenance and report back to District Weed Specialist.

(b) Minimize blading and ditch work where new invaders are found and implement a weed treatment plan.

(c) Maintain desirable roadside vegetation. If desirable vegetation is removed during blading or other ground-disturbing activities, area would be revegetated where possible according to section (3) (a), (b), (c).

(d) Remove mud, dirt, and plant parts from all off road equipment before moving into planning area. Cleaning must occur off National Forest lands. (This does not apply to service vehicles that will stay on the roadway, traveling frequently in and out of the planning area.)

(e) Clean equipment prior to leaving the project site, if operating in areas infested with new invaders, as determined by the Forest Weed Specialist. Reference Contract Provision C/CT 6.626.

(f) Straw used for road stabilization and erosion control would be certified weed-free or weed-seed-free.

(7) Reduce weed establishment in road decommissioning/reclamation projects. Revegetate according to section (3) (a), (b), (c) above.

30. Recommended certified weed seed free native seed mixtures can be found in the Botany Specialist Report.

31. Where feasible for restoration of disturbed ground, cover bare soils with a thin layer of duff from adjacent sites, if available. It is important to leave some duff on adjacent sites where cover material is collected.

32. Only herbicides approved for use identified in the Helena National Forest Noxious Weed FEIS and Record of Decision (USDA Forest Service 2006) would be used. All herbicides would be used in accordance with label restrictions under that decision.

33. Inventory routes prior to new ground disturbance (road or trail construction, decommissioning) and treat weeds that occur adjacent to the route. Inventory routes for weeds one and three years after construction/disturbance and treat weeds that are presently adjacent to the roads or trails.

34. On newly acquired lands, inventory for weeds and consider appropriate treatment prior to opening to ensure weed spread is minimize.

Threatened, Endangered and Sensitive Plants

35. If any new TES plant occurrences are discovered within the planning area in the future and could be affected by travel plan implementation, appropriate mitigation would be identified in consultation with a Forest Service botanist and implemented as appropriate; separate NEPA analysis may be necessary at that time, depending on the type and scope of action.

36. A 100-foot buffer around any sensitive plant species would be required when herbicides are applied. Within this buffer only hand-pulling of weeds would be allowed, (Environmental Protection Measure #22 from the Helena National Forest Noxious Weed FEIS and Record of Decision 2006).

37. Sensitive plant occurrences along roadsides would be buffered from road maintenance activities.

38. Prior to implementation of route decommissioning, storage, new construction or re-construction, a Forest Service botanist would be consulted to ensure that any new or existing sensitive plant occurrences in the vicinity of ground disturbance would be protected. Under alternative 4, new non-motorized trail construction would occur in the vicinity of a Missoula phlox population (#32) and a whitebark pine stand (#40) and would be flagged and protected during construction activities.

39. As part of the effectiveness monitoring that would occur during the implementation phase (with highest priority given to ensuring allowed, wheeled, motorized vehicle travel—off-road but within 300 feet of the edge of designated system routes is not creating any new permanent routes, damaging existing vegetation, soil, or water resource, or crossing streams, riparian or wet areas, as described in the previous section on Monitoring, Maintenance and Enforcement), the Missoula phlox occurrence (#32) south of Granite Butte would be monitored to ensure adverse impacts to this population are not occurring since it occurs within 300 feet of a designated route under any alternative. If adverse impacts are observed,

changes in the management of motorized use would be considered or other appropriate protective measures taken, in consultation with a botanist.

40. As part of the effectiveness monitoring that would occur during the implementation phase (with highest priority given to ensuring allowed, wheeled, motorized vehicle travel—off-road but within 300 feet of the edge of designated system routes is not creating any new permanent routes, damaging existing vegetation, soil, or water resource, or crossing streams, riparian or wet areas, as described in the previous section on Monitoring, Maintenance and Enforcement), white bark pine stands would be monitored.

41. Under alternative 4, new non-motorized trail construction would occur in the vicinity of a Missoula phlox population (#32) and a whitebark pine stand (#40) and would be flagged and protected during construction activities.

42. Under alternative 4, new motorized and non-motorized trail reconstruction would occur on the Continental Divide and Stonewall trails and would require removal of whitebark pine trees. A botanist would be consulted during layout of these reconstructed segments to ensure adverse impacts are minimized.

Project Sequencing

43. Road closure, storage or decommissioning actions proposed as part of this travel plan will be implemented carefully so as not to impact road access needs for other ongoing or planned projects (e.g. fuels projects, mining activities, special uses, timber harvest, etc.).

44. Where necessary, culvert removal would be implemented at the appropriate time to avoid impacts to over-snow use. Other activities, such as road decommissioning, would be scheduled and implemented considering access to groomed and ungroomed snowmobile routes and cross-country ski routes permitted under the Blackfoot Winter Travel Plan.

45. Separate from this travel planning effort, we would work with private land owners in the areas of Patterson Prairie, Arrastra Creek, Stemple Pass and T13N, R7W to ensure appropriate access for fire management, fire emergencies, and public safety; special use permits for this access would be considered.

Recreation

46. Mountain bike trail locations would be carefully delineated on the ground, using an interdisciplinary approach to ensure proper alignments are selected to minimize resource impacts. Roads that would be stored or decommissioned as part of this travel plan may be appropriate as segments of mountain bike trails and would be considered where feasible.

47. The Helena National Forest Infrastructure Database (INFRA) would be updated to reflect that if Trail 404 is closed to wheeled motorized use yearlong as part of this decision, snowmobile use along this trail would continue as a managed use and appropriate clearing distances applied.

48. Design and layout of proposed new trail construction or reconstruction would consider the use of existing road or trail footprints wherever possible to minimize new ground disturbance

49. New trail construction and/or reconstruction and new trailhead and parking area construction would adhere to applicable agency best management practices for construction of motorized and non-motorized trails and developed recreation sites (FS-990a, pg. 89-92).

Scenery

50. If site-specific resource protection measures are needed for proposed travel route construction, reconstruction, storage or decommissioning, such measures would use natural materials such as gravel, soil, and rocks to create barriers in order prevent vehicular access where needed. Since these physical measures borrow elements from the natural landscape, the visual scenes they create are expected to meet the definition of retention (i.e., activities will repeat the line, form, color, and texture frequently found in the characteristic landscape).

Wildlife

51. Design all motorized and non-motorized route construction, trailhead and parking area construction to minimize the removal of trees greater than 12 inches d.b.h.
52. Any tree removal for roads, trails, trailheads, or parking areas should be implemented prior to May 1 or after July in order to protect nesting birds, unless surveys indicate birds are not present.
53. Goshawk surveys should be conducted along any new route requiring construction activities. In the event any new goshawk or other raptor nests are discovered in areas where construction activities are proposed, a minimum 30-40-acre no-treatment buffer will be maintained around nest trees until the young fledge.
54. Develop a site-specific action plan for acquired lands in Bartlett, First, Second, and Third Gulch prior to implementing activities in any of the action alternatives to address decommissioning, road storage, or invasive plants treatment.
55. To be in compliance with the Forest Plan standard for Management Area W-1, work with the District Biologist to refine trail improvements, as proposed in alternative 4, on the upper portion of Stonewall Mountain trail (#417) to minimize impacts to whitebark pine, which is a food source for grizzly bears, and to maintain a trail system with minimal motorized travel on the ridge to reduce disturbance and displacement of grizzly bears and mountain goats.

Roadless Areas

56. If alternative 2 were selected for implementation, two small road segments that are currently closed to motorized use, 1841 and 1841-D1, totaling 0.2 miles, would remain closed to motorized use because they occur within the Specimen Creek unroaded expanse. This would ensure that wilderness attributes and roadless area characteristics are maintained in this area.

Alternatives (or Alternative Components) Considered but Eliminated from Detailed Study

Federal agencies are required by NEPA to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). Public comments received in response to the proposed action provided suggestions for alternative methods for achieving the purpose and need. Although some of the suggestions received were used in the development of alternative 4 or in minor refinements to the other alternatives, other suggestions may have been outside the scope, duplicative of the alternatives considered in detail, or determined to be components that would cause unnecessary environmental harm. Therefore, other suggested alternatives were considered, but dismissed from detailed consideration for reasons summarized below.

Initial Travel Plan Proposed Action

Alternative 2 described in this document (and also in the DEIS as alternative 2 – proposed action) is not exactly the same as the initial proposed action that was distributed for public comment via the Notice of Intent in 2010 and 2012, although they are quite similar. Since the distribution of the proposed action in late October/early November 2010, we have made a few minor adjustments to clarify definitions, wording and otherwise edit the narrative description of the proposed action to ensure accuracy. While working with GIS coverages and in order to describe the proposed action in the level of detail necessary for analysis, we have also made several other adjustments to increase the accuracy of data for analysis. For example, the information displayed in table 3 is the same information provided during scoping in 2010 and in all subsequent NOIs; however, the miles estimates in each category for the proposed action are not the same as those provided in these prior documents. While the intent of the proposed action is the same and only minor changes have been made since scoping in 2010, how we calculated these road and trail miles has been updated to more accurately reflect the updated codes and GIS coverage.

We addressed unclassified routes, which were not done previously; these routes were identified on our 2010 scoping maps as part of the existing condition but we had not proposed any change to them at the time; this is addressed now in alternatives 2, 3 and 4.

As stated previously, we identified the need to amend the Forest Plan regarding the standard for the big game security index. The proposed programmatic plan amendment would establish a new big game security standard for elk herd units located within the planning area. As a result, Helena Forest Plan Standard 4a would be amended as it relates to the Blackfoot travel planning area. This programmatic plan amendment was not clearly stated in the original Notice of Intent or in the November 2010 newsletter describing the proposed action.

Alternative 2 described in this document better addresses the purpose and need for action and the public input received to date, and more accurately reflected on-the-ground conditions and incorporates the latest and most up-to-date GIS data; therefore, the initial proposed action was dismissed from further detailed analysis.

Forest Plan Big Game Security Amendment

The preferred big game security amendment described in this document as Preferred Forest Plan Amendment Alternative B is not exactly the same as the initial big game security amendment that was described in the DEIS, although they are similar. As described previously in this chapter and in full in appendix F, we have revised this big game security amendment language (and titled it big game security forest plan amendment alternative B) based on a thorough evaluation of public comments we received on the DEIS, continued collaboration with MFWP and additional internal team input. Most notably were the use of the 30 percent threshold and the 250-acre security block size. Through collaboration, alternative B was developed to include the recommendation to increase the security block size to 1000 acres and increase the desired minimum threshold to 50 percent even though it was realized that some units might never meet this desired level.

While the DEIS described the rationale for the proposal to develop a new big game security standard and compared the effects of keeping the existing standard to changing it, it did not clearly state and describe both alternatives (a no-action/no change alternative to keep the existing standard and the proposed action). We have corrected this. Keeping the current big game security standard in the Forest Plan is analyzed in detail in this FEIS as Forest Plan Amendment Alternative A

In the process of developing Forest Plan Amendment Alternative B, we considered other suggestions made by the public, brought forward internally or via MFWP. These other alternatives considered but ultimately dismissed from detailed analysis are described below.

A modification of our existing Forest Plan Standard 4(a) to clarify the unit of analysis as only including those lands within the National Forest System Boundary: Adjusting the standard to just reflect conditions on National Forest System lands would eliminate the current burden of trying to compensate for changing conditions on private lands. However, the existing standard still requires the use of a cover percentage to calculate the security index. It has been shown that compliance, or non-compliance, with this requirement is not really reflective of conditions affecting elk security and population levels and can be greatly affected by natural events beyond Forest Service management control. Changing the standard to only address NFS lands would not alter this and therefore not improve upon the present situation.

Forest Plan Amendment Alternative B but with the dates of 10/15 – 12/1: Through collaboration with MFWP and review of public comments it was recognized that vehicle traffic associated with the archery season displaced elk and compromised elk security. MFWP cited a consistent increase in the number of archery hunters (doubling between 1990 and present) and subsequent increased levels of motorized use during the archery season. This is supported by recent studies that documented the effects of archery season on elk movement (Conner et al. 2001, Vieira et al. 2003) and on elk pregnancy rates (Davidson et al. 2012). Incorporating only the rifle season into alternative B would not provide the desired elk security. As a result, this alternative was not carried forward into the FEIS.

An alternative with specifications outlined in Alternative B with EHU-specific security percentages: This alternative would adopt the specifications detailed in alternative B but rather than using 50 percent security as a benchmark, threshold percentages would be alternative and herd unit specific. This was dismissed because opportunities for improvement in elk security would not be evident.

Non-motorized Inventoried Roadless Areas

Prior to the preparation of the DEIS, we initially explored another alternative at the request of Wildlands CPR, in a letter dated July 19, 2012. They requested that we analyze an additional alternative that designates all Inventoried Roadless Areas (IRAs) in the Blackfoot travel planning area as non-motorized, and decommissions all roads in IRAs, including many of the roads proposed for storage under alternative 3. Upon further clarification with Wildlands CPR (as documented via email during September 2012 and available in the project record), this request was rescinded. We evaluated certain separate components of this preliminary alternative for possible inclusion into alternative 3, but did not carry them forward for further analysis as part of alternative 3 because they would not adequately address the purpose and need for action related to exclusive use from private land and providing reasonable access for future resource management. For these reasons, this alternative was dismissed from further detailed analysis prior to preparation of the DEIS.

During the comment period on the DEIS, commenters suggested also that an alternative be analyzed that designates all inventoried roadless areas (IRAs) in the Blackfoot travel planning area as non-motorized and to decommission all roads in IRAs. Following the comment period, the IDT evaluated each route within IRAs looking for any additional opportunities to close roads to motorized access, and sections that could be decommissioned (a detailed data table is available in the project record). This analysis resulted in the following:

- Alternatives 2, 3 and 4 all propose a reduction of motorized routes in IRAs. Alternative 1 – no action (existing condition) has approximately 25.5 miles of open highway legal routes in IRAs. The action alternatives range from 18.3 miles in alternative 2 to 16.2 miles in alternative 4.
- Route decommissioning in IRAs ranges from 7.7 miles in alternative 2 to 59.5 miles in alternative 4.

Looking at each route specifically resulted in the IDT's determination that open-highway legal routes in IRAs are either main access routes to dispersed and developed recreation sites, provide access to private lands, or are motorized trails. The analysis presented in chapter 3 describes the differences in effects to roadless characteristics from implementing all alternatives, including the no-action alternative. The action alternatives are in compliance with the Forest Plan and all reasonable route closures were considered and are reflected in the range of alternatives. For these reasons, this alternative, other than the modifications discussed above, was again dismissed from further detailed analysis.

Total Maximum Daily Load (TMDL) Standards

Internal discussions on the range of alternatives after the DEIS was prepared identified the need to consider the relationship of proposed actions to TMDL streams and whether any changes to the alternative was warranted to ensure TMDL standards were being followed. Several stream segments within the planning area are classified as impaired and have TMDLs assigned by the Montana Department of Environmental Quality. The watersheds that contain the impaired streams are discussed in more detail in the hydrology report for this project and summarized in the hydrology section of chapter 3. We conducted an analysis of all of the changes proposed for each alternative and how these changes might affect streams. The IDT looked closely at routes in these watersheds and where we could change management to reduce sedimentation from roads. Each alternative has varying levels of road storage and decommissioning with alternative 4 having the highest level of road decommissioning proposed out of all alternatives. Most of 303(d) listed streams would show improvements in each action alternative as measured by sediment reduction modeling, miles of road within 150 feet of streams to be decommissioned, and stream crossings to be restored. Some streams would likely see no reduction to sediment delivery, such as Blackfoot River (Hardscrabble Creek), Ward Creek or Washington Creek. However, these stream channels have other factors contributing to their impairment that road closures alone would not ameliorate. Nevertheless, as shown in chapter 3, sedimentation from roads would likely be reduced over the long term for most watersheds in the planning area upon implementation. For these reasons, we did not make additional changes to the proposed alternatives related to TMDL standards.

Trail Closure Dates

Several commenters on the DEIS suggested that variations on proposed seasonal closure dates for motorized trails should be considered. Some suggested that the closure dates should be standardized across all trails to October 15 – May 30 and to use closures during elk archery season only when necessary. Others suggested that we should consider closure dates of September 1 – May 1, September 1 – May 15, and December 1 – May 1 or May 15. One commenter also suggested alternating motorized use and non-motorized use weekly instead of establishing seasonal closure dates.

The IDT considered all of these scenarios and compared the feasibility of these compared to what was proposed in alternatives 2 and 3 in the DEIS. The suggestion to use a September 1 closure date is a component of alternatives 2, 3 and 4 for many routes. This would equate to the beginning of the archery season. The suggestion to use an October 15 closure date is a component of alternative 2 and alternative 4 for many trails. The suggestion to use a December 1 – May 15 closure is a component of alternative 4 for a few routes. The suggestion that the same closure beginning and end date for all trails is a component of alternative 3.

The suggestion to use December 1 as the beginning of the closure period for more than just a few miles of trail was not carried forward for detailed analysis because it is essentially incorporated already in the closure dates of September 1 and October 15 that is a component of the action alternatives. It would also introduce conflict with the winter travel plan decision.

The suggestion to alternate weekly would not meet the project objective of reducing the complexity of the current Forest Visitor's map. While this complex approach may be appropriate in some very high value/high use areas, this would not be reasonable in our planning area nor would it be consistent with the Blackfoot-North Divide Winter Travel Plan decision.

Full-Size Vehicle Access in Bartlett, First, Second, and Third Gulch Areas / No Size Limit in Bartlett Creek Area

Commenters on the DEIS suggested that the Bartlett Creek area be open to full-size vehicles, or to not limit vehicle size at all instead of exclusive to OHV use. Full-size vehicle use would be restricted under alternatives 2, 3, and 4. The IDT considered this suggestion and determined that full-size vehicle access would not fulfill the purpose and need of providing a balanced mix of recreational opportunities. This alternative was dismissed from further detailed analysis.

Commenters on the DEIS also suggested other management options in the First, Second and Third Gulch areas. We considered all these suggestions. All feasible options were included in the action alternatives.

Designated Trail 417 as Non-Motorized or as Single Track Motorized / Close Route on September 1st

Commenters on the DEIS suggested that this trail be managed as a non-motorized trail instead of a motorized trail as proposed in alternatives 2, 3 and 4. The IDT considered this suggestion but dismissed it from further analysis because this route is used as the primary access to a Forest Service fire lookout tower and the Lewis & Clark County and Homeland Security communication site; motorized use is necessary for transportation of personnel and supplies for these facilities. We recognize that this area is used by grizzly bears and has the potential to benefit from additional motorized closures. We also recognize that this route could be closed to public motorized use but still be open for administrative use. We recognize that less motorized use would benefit wildlife. However, due to the frequency of administrative use, it is unlikely that substantial benefit would be realized from public closure; it would likely still exceed the threshold for the grizzly bear 'moving windows' analysis. Due to the need to haul propane and other large items to the tower and site, it would not be feasible to manage this as a single track route. We also considered the suggestion to close this route on September 1 for wildlife security but for the reasons described above, did not carry this forward for detailed analysis.

Pro-Recreation/Equal Sharing Alternative

Several commenters on the DEIS suggested we consider a new alternative that includes equal sharing of the Forest between motorized and non-motorized users on lands outside of wilderness; that this new alternative would be more consistent with Forest Service multiple-use ideals than the alternatives analyzed, considering that non-motorized users can use motorized routes, but not vice versa. Adding more non-motorized routes over motorized routes does not meet the need for equal access to the planning area for motorized and non-motorized uses.

The IDT considered this suggested new alternative, recognizing that The Multiple Use – Sustained Yield Act does not mandate an “equal share” of a trail system’s mileage between the various modes of transportation, and that non-motorized users can use motorized trails, but not vice versa. Because this alternative did not specify specific changes to particular roads or trails, we were not able to quantify or evaluate specific needs. We did, however, compare the overall level of motorized versus non-motorized use proposed in alternative 2 and determined that alternative 2 provides a ratio of approximately 3:4 (motorized use to non-motorized use).

Alternative 4 was developed based in part on public comment on the DEIS and strives to achieve a balance between recreational uses and resource protection. Where specific roads and trails were mentioned, we considered these specific suggestions to determine if they warranted further analysis as part of alternative 4. For these reasons, we feel the range of alternatives is adequate and addresses the balance between motorized and non-motorizes uses appropriately; therefore, did not carry this alternative forward for further detailed analysis.

Single Track Motorized Use on Livestock Trails

Commenters on the DEIS suggested we consider allowing single track motorized use on cattle trails. We considered this suggestion but dismissed it from detailed analysis because it would result in designated use on trails that do not meet current design standards and may contribute to resource damage. It would also not meet our project objective of reducing the complexity of management.

Non-System, Unclassified Motorized Trails

Several commenters on the DEIS suggested we consider not adopting any non-system, user-created routes into the route system, and all of these routes should instead be closed yearlong, stored or decommissioned to deter illegal use. We considered this suggestion but dismissed it from detailed analysis because it would conflict with our purpose and need and project objectives. Unclassified routes were all individually considered by the IDT during the development of the alternatives. Where these routes had a purpose and addressed a need without presenting a resource concern, they were included in the proposed route system. If they had any substantial resource issue they were proposed for closure, storage or decommissioning.

Do Not Allow Motorized Use Off of Designated Routes, or Reduce the Size of the Buffer

Several commenters on the DEIS suggested that we should remove the allowance of motorized vehicle use within 300 feet of designated routes or reduce it to 100 feet or less because of the potential for user-created routes to develop in these areas and adversely impact resources. Commenters felt we would not be able to adequately monitor these areas and implement closures when necessary. We considered this suggestion and recognize the concern regarding the need for this use to be monitored and changes implemented if resource damage occurs. This zone is a component of each action alternative in order to provide a reasonable level of access for recreational purposes, and with the implementation of the criteria for resource protection (described in the actions common to all alternatives section), believe that off-route vehicle impacts would be minimized.

We have observed that, in general, this type of use in the planning area since 2001 has been within acceptable environmental limits. While we do not have a comprehensive survey of this use, cursory monitoring and field checks by various Forest Service resource crews (such as the watershed crew, as documented in (Coleman 2014)) have not resulted in any wide-spread violations or wide-spread resource concerns. Where site-specific issues have arisen, we have been able to address them via site-specific area closures or restrictions. Therefore, we propose to continue this practice under alternatives 1, 2, 3 and 4 and feel that this is consistent with the 2001 Tri-State OHV Decision , the 2005 Travel Planning Rule, Executive Order 11644 (Use of Off-Road Vehicles on Public Lands) and the Forest Plan. We are committed to monitoring and enforcement of this provision (see section of actions common to all alternatives previously in this chapter), and feel that this will ensure routes would not expand in these areas and we would deal with problems if they arise. Providing this buffer zone is consistent with agency policy and other agency travel plans. For these reasons, this alternative was dismissed from further detailed analysis.

Loop Trail in Rochester Gulch

Several commenters on the DEIS suggested we consider developing a motorized loop trail in the Rochester Gulch area. We used this and other suggestions for motorized loop routes during development of alternative 4. However, we determined that a loop in this Rochester Gulch area would result in impacts to private property and resources, and therefore dismissed from further detailed analysis.

Decommission All Roads within 150 feet of Streams

Several commenters on the DEIS suggested we consider decommissioning all roads that are within 150 feet of streams, and consider culvert removal and stream crossing removal in more areas to protect bull trout and other aquatic species. We considered this suggestion but dismissed it from further detailed analysis because the action alternatives already propose road closures and storage or decommissioning where needed to address resource concerns.

We conducted a site-specific analysis of every route in the planning area to determine whether road closures were needed to address resource concerns. We disagree that a project-area-wide closure is necessary. Wherever feasible without creating a substantial impact to important access, these routes were proposed for decommissioning or storage in one or more of the action alternatives.

We have considered these suggested design features and those that were appropriate to this analysis have been added to chapter 2. Current road design practices implemented on the Forest include these recommendations from the EPA: *Structures are typically placed outside the stream channel and stream restoration is routinely a part of any construction-related project. Best management practices and project design features would be followed for proposed actions that would also minimize the potential for adverse impacts.* For these reasons, we dismissed this alternative from further detailed analysis.

Close Cotter Creek Road

Commenters on the DEIS suggested we consider closing and gating Cotter Creek road until the crossings of the tributaries can be upgraded. We considered this suggestion and it is a part of alternative 4; Cotter Creek Road (330-B1) would be closed to wheeled vehicles yearlong in alternative 4 but it is proposed to remain open in alternatives 2 and 3.

No Tracked Vehicles on Closed Roads

Commenters on the DEIS suggested that we consider not allowing tracked vehicles on closed roads. We dismissed this from detailed analysis because closed roads do not allow any motorized use - tracked OHV use or otherwise - which is consistent with this suggestion. For over-snow tracked vehicles, the separate winter travel plan decision provides more detail on how over-snow use in the planning area will be managed.

No Motorized Use in the Black Mountain/Lone Point Area

Commenters on the DEIS suggested we consider not opening the Black Mountain/ Lone Point area to motorized use because it is used by grizzly bears. The Black Mountain area is only open for administrative Forest Service access and we feel this provides the adequate protection needed for grizzly bears in this area. This would not change with implementation of alternatives 2, 3, and 4. In the Lone Point area our range of alternatives includes increased motorized access over the existing condition to provide more recreational opportunity to meet our purpose and need. We considered further restricting motorized use in the Lone Point area but dismissed this from detailed analysis because under the existing condition motorized access is currently limited to a few roads.

As indicated in the wildlife report, grizzlies have the potential to occur throughout the planning area. We used the Northern Continental Divide Ecosystem Access Management Protocol, the FP standard for open road densities, and other considerations as tools for analyzing potential effects to grizzly bears related to managing motorized access within the NCDE grizzly bear recovery zone. This analysis is shown in chapter 3 and in detail in the wildlife report. While we are not proposing to close both the Lone Mountain and the Black Mountain areas to all motorized use, the preferred alternative meets Forest Plan direction and NCDE Access Management Protocol guidelines while still providing recreational access.

No Mountain Bikes on the CDNST

Commenters on the DEIS suggested we consider not allowing mountain bikes on the CDNST since they generally interfere with the nature and purposes of the trail. We considered this suggestion carefully, but subsequently dismissed this from further analysis because we do not feel the current or anticipated future level of mountain bike use on this trail detracts from the nature and purpose of the CDNST and is consistent with the goals for this area. We recognize that this use should be monitored over time and if mountain biking becomes extremely popular on any or all segments of the CDNST in the BNWTP area; we would need to reconsider whether a closure may be necessary.

Decommission More Roads

Commenters on the DEIS suggested we consider several additional roads for decommissioning, as summarized in appendix I. We carefully considered all suggestions for new site-specific road decommissioning; alternative 4 includes additional routes for decommissioning and incorporates the highest level of decommissioning possible while still meeting other project needs and objectives.

No Off-Highway Vehicle Restrictions

Commenters on the DEIS suggested that we consider allowing OHVs on all of the trails in the planning area without any restrictions. We dismissed this suggestion from further detailed analysis because it would not address project objectives and the purpose and need for action; it would result in resource concerns, public safety issues, and therefore would conflict with Executive Order and Forest Service policy.

Create Motorized Trail Connector Routes in the Beaver Creek and Keep Cool Lakes Area

Commenters on the DEIS suggested we consider creating new motorized loop routes in these areas to enhance riding opportunities. We considered many suggestions for loop trail opportunities, and those that were feasible and met our project objectives and purpose and need for action are included in the range of action alternatives. Routes in these areas would cross private land and the Forest Service does not have jurisdiction to alter them. Sensitive wetland habitat occurs in this area as well that would be damaged by increased use.

Designate Route 1825F for Year-Round OHV Use

Commenters on the DEIS suggested we consider designating this route for year-round use of highway legal vehicles so the mining company can continue to access the southwest portion of their mining claim. We considered this suggestion but dismissed it from further detailed analysis because we have not received a plan of operation from the mining claimant for this use, and feel public road closure is more appropriate in this area to address the purpose and need for action. The subject of this EIS and subsequent decision is about designating public motorized use, not administrative use. We would consider this mining access for potential administrative use, if the corporation submits a mineral plan of operations with the intent to utilize this road for mining claim access.

Designate Motorized Trail Access in Alice Creek Area

Commenters on the DEIS suggested we consider motorized trail access from DNRC lands in the Alice Creek area. We considered this suggestion and have included the connection on NFS land in alternative 4 but do not have jurisdiction over routes on DNRC lands. We suggest that the motorized community contact DNRC to develop opportunities in this area.

Allow Motorized Access for Game Retrieval behind Closed Gates

Commenters on the DEIS suggested we consider allowing OHV access for game retrieval and to consider this an appropriate use even on closed roads. This is a component of alternative 1. Research studies show that elk retreat to areas away from OHV use so allowing widespread OHV use during the hunting season may serve to push elk even further from motorized routes thus extending the retrieval distance and time. It is the responsibility of hunters to consider their ability to retrieve an animal prior to harvesting it. The 2001 Tri-State OHV Plan prohibits off-route motorized travel and the Montana Hunting Regulations state: “it is illegal for anyone to operate, on public lands, a motorized wheeled vehicle off legal routes (including game retrieval).” Therefore, we dismissed this suggestion from further detailed analysis as it would conflict with Forest Plan direction, would not meet the purpose and need for action and would impact wildlife habitat.

CDNST Management

Several commenters on the DEIS suggested various management scenarios for the CDNST, including managing it entirely for non-motorized use. We carefully considered all suggestions for CDNST management and looked at options segment-by-segment, as captured in IDT meeting notes in the project record. The recreation section in chapter 3 also includes a detailed discussion of each of these CDNST segments, with maps, for all four travel plan alternatives. We feel the proposals for the CDNST included in this range of alternatives is an appropriate suite of options that meet the project objectives and purpose and need for action and guiding direction from the 2009 CDNST Comprehensive Plan. Some sections of this trail are on designated Forest System routes or provide access to other Forest roads, private land, or lands suitable for timber production in the Forest Plan. Therefore the suggestion to manage the trail entirely for non-motorized use was dismissed from further detailed analysis. Alternatives 3 and 4 would, however, manage this trail primarily for non-motorized use with a few exceptions.

T13N, R9W Access

Several commenters on the DEIS suggested we consider variations on access to this area. We considered these suggestions for additional motorized route connections. The loop route suggestion was not carried forward because the area is too steep for motorized use and is adjacent to a roadless area; what is feasible here is a component of alternative 4. Another access suggestion (the ‘Wall’ area) was not carried forward for further analysis because of the mining history in this area and the need for cultural resource protection; what is proposed instead is a non-motorized interpretive trail which would educate people about the mining history in the area.

Comparison of Alternatives

This section provides a summary of the effects of implementing each alternative. Information in the following table is focused on activities and effects where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives.

Table 8. Travel Plan alternative comparison by purpose and need, primary components and key issues

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Achievement of Objectives and Purpose and Need				
Provide manageable system of designated public motorized and non-motorized access routes and areas	Alternative 1would continue to provide a manageable route system and access to the national forest. It would, however, leave a number of miles of road on the ground not considered necessary for the management of the national forest.	Alternatives 2, 3 and 4 provide a manageable system of designated public motorized access routes and provide detailed analysis of every road and trail on the system to determine effective management of that road and trail (route).		
Designate public wheeled motorized and non-motorized use for roads and trails	Retains existing system of roads and trails, and would not result in a motor vehicle use map. Occasional administrative use would continue to be allowed on open routes, routes closed yearlong and routes closed seasonally	Alternatives 2, 3 and 4 designate public wheeled motorized and non-motorized use for roads and trails. An MVUM would be created for all designated motorized routes. Non-motorized routes would be shown on the Forest Visitor Map. Would continue to allow occasional administrative use on open routes, routes closed yearlong and routes closed seasonally.		
Mitigate resource concerns associated with certain routes and uses	The current transportation system would remain with 446 miles of designated NFS roads and 56 miles of motorized trail for a total of 502 motorized route miles; no specific mitigations would be applied except on a case-by-case basis. Standard operating procedures and best management practices would continue to be applied	The designated NFS route system (roads and motorized trails combined) would be reduced by 58 miles or 12%. Project design features and best management practices would be implemented for alternative 2. Because there would be fewer designated motorized routes under alternatives 2 than under alternative 1, this reduction in	The designated NFS route system (roads and motorized trails combined) would be reduced by 153 miles or 30%. Project design features and best management practices would be implemented for alternative 3. Because there would be fewer designated motorized routes under alternative 3 than under alternatives 1 or 2, this	The designated NFS route system would be reduced by 150 miles or 30%. Project design features and best management practices would be implemented for alternative 4. Because there would be fewer designated motorized routes under alternative 4 than under alternatives 1 or 2, this alternative and alternative 3

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	where appropriate during routine maintenance activities	route density would also aid in mitigating resource concerns with those routes that are closed, stored or decommissioned. This reduction in route density would also result in a reduction in off-route travel within 300 feet of a designated route because there would be fewer designated routes from which this would be allowed. See project design features section in chapter 2.	alternative and alternative 4 goes the furthest in reducing route density and mitigating resource concerns with those routes that are closed, stored or decommissioned. Because alternative 3 would have the fewest motorized trails designated (compared to alternatives 1, 2 or 4), it would result in improved mitigation for resource concerns associated with these closed routes. This reduction in route density would also result in a reduction in off-route travel within 300 feet of a designated route because there would be fewer designated routes from which this would be allowed.	go the furthest in reducing road density and mitigating resource concerns with those routes that are closed, stored or decommissioned. Because alternative 4 would have the fewest roads designated (compared to alternatives 1, 2 or 4), it would result in improved mitigation for resource concerns associated with these closed roads. This reduction in route density would also result in a reduction in off-route travel within 300 feet of a designated route because there would be fewer designated routes from which this would be allowed.
Ensure route system is in compliance with Forest Plan direction and NCDE Access Management Guidelines (evaluated with Moving Windows analysis) for grizzly bear security and habitat within the recovery zone	Open road densities were analyzed under each alternative for Forest Plan consistency for this project. The FP standard threshold of 0.55 miles per square mile is met under all alternatives. A moving windows analysis was also conducted for the three grizzly bear subunits for consistency with the NCDE Access Management Guidelines for open and total motorized routes densities and security core habitat. The Access Management Guidelines are not fully met under any of the alternatives although Alts 3 and 4 would result in considerable improvement. See Grizzly Bear in the Significant Issues section of this table for more details.			
More closely align current science, local conditions and other information with elk security needs that meet the intent of the Forest Plan; ensure Helena Forest Plan (USDA Forest Service 1986, as amended) management direction applicable to big game security is up-to-date and based on the best	The big game security Forest Plan programmatic amendment Alternative B (preferred alternative) was developed to address more recent science, local conditions, and other information and therefore addresses this need. While the existing condition in	If Forest Plan amendment alternative B (preferred alternative) is implemented with one of the travel plan action alternatives (alternative 2, 3 or 4), this need would be met because the preferred amendment alternative was developed based on local conditions, continued collaboration with MFWP biologists, and the best available science related to big game security. If Forest Plan amendment alternative A (no action) is implemented with one of the travel plan action alternatives, this need would not be met.		

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
available information.	terms of travel planning would remain unchanged in the Travel Plan Alternative 1, the method by which big game security during the hunting season would be measured would be based on that associated with Forest Plan programmatic amendment Alternative B, if selected.			
Ensure the route system provides continued access for resource management needs	Provides for adequate future resource management on the existing road system.	Provides for adequate future resource management on higher maintenance level roads. Segments of new construction are proposed where considered necessary to improve management of the national forest.		
Ensure the route system minimizes exclusive use from and to private land and mining claims and that all routes provide for public access wherever possible.	Does not address this: exclusive use would continue in some areas	Roads that fail to provide public access due to jurisdictional concerns are proposed for storage (approximately 8 miles). Placing the roads in storage would prevent certain user groups (private land owners and miners) from having access to the forest that is not given to the public, while retaining those roads for future resource management needs.		
Reduce the complexity of the current travel map (Forest Visitor Map)	The 12 different seasonal closure codes would remain and therefore map complexity would not change. The current ambiguity resulting from the lack of clearly designating motorized trails as open to two-wheel motorized or motorized 50 inches or less in width would remain. All non-motorized trails would remain open to foot, stock, and mountain bike traffic with no exceptions. A motor vehicle use map (MVUM) would not be produced under alternative 1; a Forest Visitor Map would	Alternative 2 would clearly show the trails and roads open to motorized use on a MVUM and more specifically, the type and season of allowable motorized use. There would be 9 different closure codes for alternative 2, reducing the number of closure categories and simplifying ease of use. There would also be fewer miles of open road, resulting in an easier to read map. An MVUM that clearly shows open motorized routes would be produced to supplement the information available on the Forest Visitor Map.	Alternative 3 would clearly show the trails and roads open to motorized use on a MVUM and more specifically, the type and season of allowable motorized use. There would be 5 different closure codes for alternative 3, substantially reducing the number of closure categories and simplifying ease of use. This alternative would go the furthest in reducing map complexity. An MVUM that clearly shows open motorized routes would be produced to supplement the information available on the Forest Visitor Map.	Alternative 4 would clearly show the trails and roads open to motorized use on a MVUM and more specifically, the type and season of allowable motorized use. There would be 10 different closure codes for alternative 4, somewhat simplifying ease of use but not as much as alternative 2 or 3. An MVUM that clearly shows open motorized routes would be produced to supplement the information available on the Forest Visitor Map. There would also be fewer miles of open road, resulting

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	continue to be used if alternative 1 is selected for implementation, and would continue to be updated as needed.	Designating motorized roads and trails on an MVUM would remove speculation by the public as to the allowable use, and dates of open use. The Forest Visitor Map showing designated non-motorized trails would be updated to reflect the allowable non-motorized uses of the trails, and this would be more detailed under alternatives 2, 3 and 4 than under alternative 1.	There would also be fewer miles of open road, resulting in an easier to read map. Designating motorized roads and trails on an MVUM would remove speculation by the public as to the allowable use, and dates of open use. The Forest Visitor Map showing designated non-motorized trails would be updated to reflect the allowable non-motorized uses of the trails and this would be more detailed under alternatives 2, 3 and 4 than under alternative 1.	in an easier to read map. Designating motorized roads and trails on an MVUM would remove speculation by the public as to the allowable use, and dates of open use Compared to alternatives 2 and 3, motorized trails would be managed with 2 additional closure dates. The Forest Visitor Map showing designated non-motorized trails would be updated to reflect the allowable non-motorized uses of the trails and this would be more detailed under alternatives 2, 3 and 4 than under alternative 1.
Provide for wheeled motor vehicle travel for camping and parking associated with camping near designated system routes.	The 2001 Tri-State OHV Decision allowed off-route vehicle camping within 300 feet of roads and trails; but, required visitors to select camp sites by non-motorized means and access these campsites by the most direct route causing the least damage. These uses would continue to be allowed under alternative 1	Alternatives 2, 3 and 4 would allow wheeled motorized vehicle travel for camping and parking associated with camping within 300 feet of designated motorized system routes, including roads and trails (unless signed otherwise or specifically closed) as long as: • No new permanent routes are created by this activity • No damage to existing vegetation, soil, or water resources occurs • Travel off-route does not cross streams • Travel off-route does not traverse riparian or wet areas • Recreationalists must use the most direct route to disperse camp • Recreationalists must select their site by non-motorized means		
Provide for parking safely next to the side of the road	All alternatives would provide for legal parking within 30 feet from the edge of the designated motorized route surface. Parking next to the road means a person could still have a picnic, set up a campsite, ride their bicycle, hike, or do any other legal activity.			
Primary Alternative Components[1]				

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Miles of designated NFS roads (that would be shown on the MVUM (under alternative 2, 3 or 4)	446 (would be shown on a Forest Visitor map)	352	302	289
Miles of designated motorized trails	56	92	47	63
Miles of designated non-motorized trails (all categories combined, including mountain bike trails)	71	120	158	130
Miles of road storage	0	135	76	82
Miles of road decommissioning	0	8	200	212
Miles of new road construction	0	0.2	0.2	0.2
Miles of road reconstruction/relocation	0	0	0.5	0.6
Miles of existing unclassified routes that would be closed, stored or decommissioned (approximately 60 miles exist now)	0	39	54	53
Miles of new motorized trail construction	0	2	3	4
Miles of motorized trail relocation/reconstruction	0	0	0	9
Miles of new non-motorized trail construction (this is primarily for new mountain bike trail construction)	0	31.5	31.5	21
Miles of non-motorized reconstruction	0	0	0	3

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Total Miles of designated mountain bike routes:	0	90	90	79
Mountain bike and foot travel (hiking)	0	19	18	18
Mountain bike, foot travel and horseback riding	0	20	53	27
Mountain bike, foot travel, horseback riding and motorized trail	0	38	8	23
Mountain bike, foot travel, and motorized trail	0	1	1	1
Mixed use along existing road	0	11	10	9
Changes to CDNST, trail #440 (approximate length is 50 miles)	No change; mix of motorized and non-motorized use.	No change; mix of motorized and non-motorized use.	Managed primarily for non-motorized use; seasonal motorized use (closed 9/1-6/30) would be limited to approximately 1 mile of trail and the rest of the trail would be managed for non-motorized use.	Managed primarily for non-motorized use; approximately 3 miles of non-motorized trail would be reconstructed and approximately 1 mile of trail would be managed for seasonal motorized use (closed 10/15-6/30); overall trail length would increase by approximately 1 mile due to reconstructed trail sections
Changes to Helmville-Gould Trail, trail #467 (approximate length is 14 miles)	No change; motorized use (vehicles 50 inches or less); no seasonal restrictions.	No change; motorized use (vehicles 50 inches or less); no seasonal restrictions.	Managed for non-motorized use from its intersection with CDNST to Dalton Mountain.	Motorized use; approximately 5 miles of motorized trail would be reconstructed; overall trail length would increase by approximately 1 mile due to reconstructed trail sections
Changes to Stonewall Trail, trail #417 (approximate length is 5 miles)	No change; motorized use (vehicles 50 inches or less); no seasonal restrictions.	No change; motorized use (vehicles 50 inches or less); no seasonal restrictions.	Closed to wheeled motorized use from 9/1-6/30 annually.	Seasonal motorized use for vehicles 50 inches or less (closed 10/15-6/30); approximately 3 miles of motorized trail would be reconstructed; overall trail length would increase by approximately 1 mile due to reconstructed trail sections

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Number of new trailheads and parking areas designated	0	5 trailheads 2 parking areas	5 trailheads 2 parking areas	In addition to those included in alternatives 2 and 3, two additional trailheads would be designated. Total: 7 trailheads 2 parking areas
Forest Plan Amendment for Management Area N1 (Granite Butte proposed research natural area) and R1 (Nevada Mountain)	The Forest Plan would not be amended under alternative 1. All existing standards for management areas N1 and R1 would remain as written	The wording in the Forest Plan would change for management area N1 in order to allow management of a motorized trail within this area. The wording in the Forest Plan would change for Management Area R1 in order to allow management of a motorized trail within this area. Effects of implementing this amendment to other forest resources are included in each resource section of chapter 3. If notable changes are expected, they are included in this table.	The wording in the Forest Plan would change for management area N1 in order to allow management of a non-motorized trail within this area. The Forest Plan would not be amended for management area R1 under alternative 3. Effects of implementing this amendment to other forest resources are included in each resource section of chapter 3. If notable changes are expected, they are included in this table.	The wording in the Forest Plan would change for management area N1 in order to allow management of a non-motorized trail within this area. The wording in the Forest Plan would change for Management Area R1 in order to allow management of a motorized trail within this area. Effects of implementing this amendment to other forest resources are included in each resource section of chapter 3. If notable changes are expected, they are included in this table.
Significant Issues				
Terrestrial Wildlife (See EIS chapter 3)				
Elk				
Summer range habitat effectiveness (HE) in all eight Elk Herd Units (Arrastra Creek, Beaver Creek, Flesher Pass, Keep	Currently, two of the eight elk herd units provide 50% or greater summer range habitat effectiveness. For the eight herd units combined open	Under alternative 2 open road densities among the eight herd units would decrease in six herd units, remain unchanged in one and	Under alternative 3 open road densities decrease in 6 herd units and remain unchanged in two herd units. Correspondingly, HE values	Under alternative 4 open road densities among the eight herd units would decrease in five herd units, remain unchanged in 2 and

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Cool, Lander's Fork, Nevada Creek, Ogden Mountain, and Poorman): Habitat effectiveness of 50% is recommended	road density averages 2.45 mi/mi2 resulting in an average HE of 44.4%. Summer range road densities and HE values would remain unchanged under this alternative.	increase in one. Correspondingly, HE values would improve in 6 herd units, remain unchanged in one and decline in one. Similar to alternative 1, only two of eight herd units would provide 50% or greater HE. For all 8 herd units combined the average for summer open road densities would decline slightly to 2.3 mi/mi2 and the average HE values would improve to 46%.	would improve in 6 herd units and remain unchanged in 2. Similar to alternatives1and 2, only 2 of 8 herd units would provide 50% or greater HE. For all eight herd units combined the average for summer open road densities would be reduced the most under this alternative to 2.3 mi/mi2 resulting in the highest average HE value of 46.5%.	increase in one. Correspondingly, HE values would improve in five herd units, remain unchanged in two and decline in one. Similar to alternatives 1, 2 and 3, only two of eight herd units would provide 50% or greater HE. For all eight herd units combined the average for summer open road densities would decline slightly to 2.33 mi/mi2 and the average HE values would improve to 45.6%. Overall, in comparison to the existing condition, alternative 4 would result the least improvement to summer range open road density
Forest Plan Standard 4(a) Hiding cover/Open road density (miles/square mile) during big game hunting season (10/15 – 12/1)	Currently, only two of the eight elk herd units meet the hiding cover to open road density ratio during hunting season for Standard 4(a). Six herd units do not meet the minimum hiding cover requirement therefore are not capable of meeting Standard 4(a). Open road densities and hiding cover would remain unchanged under this alternative.	Under alternative 2 those herd units meeting or not meeting standard 4a would remain unchanged. The total average road density for all eight herd units would decline slightly from 1.06 to 1.04 mi/mi2 however, hiding cover values would remain unchanged. Therefore, 6 of 8 herd units would remain incapable of meeting the standard regardless of road densities because the minimum hiding cover requirement for the standard is not met.	Under alternative 3 those herd units meeting the standard would remain unchanged from alternatives 1 & 2. Total road densities would decrease more than alternative 2 (from 1.06 to .91 mi/mi2) however hiding cover values would remain unchanged. Therefore, 6 herd units would continue to be incapable of meeting the standard regardless of road densities because the minimum hiding cover requirement is not met.	Under alternative 4 those herd units meeting the standard would remain unchanged from alternatives 1, 2, or 3. Total road densities would decrease more than alts 2 and 3 (from 1.06 to .86 mi/mi2) however hiding cover values would remain unchanged. Therefore, 6 herd units would continue to be incapable of meeting the standard regardless of road densities because the minimum hiding cover requirement is not met.
Summer Range Hiding Cover - Forest Plan standard 3 (maintain 50% hiding cover per elk herd unit, per the Forest Plan)	Forest Plan standard 3 for summer range hiding cover is currently met for three of the eight elk herd units under the current condition; this would not change with	No notable change in the percent of hiding cover for any of the eight herd units. In total, 29 acres of hiding cover spatially scattered across 3 herd units would be affected.	Similar to alternative 2. No notable change in the percent of hiding cover for any of the eight herd units. In total, 30 acres of hiding cover spatially scattered across 4 herd units would be	Similar to alternatives 2 and 3. No notable change in the percent of hiding cover for any of the eight herd units. In total, 28 acres of hiding cover spatially scattered across five

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	implementation of alternative 1. Based on MFWP elk population estimates and trends (FEIS Table 63) resident elk are successfully utilizing the landscape regardless of current hiding cover conditions supporting the intent of FP Standard 3.	Two of the three herd units would continue to meet the FP standard. Two acres (.01%) of hiding cover would be affected in the herd unit not meeting the FP standard. The total acres of hiding cover that would be affected is sufficiently small that the percent hiding cover for each of the eight herd units would remain unchanged and consistent with the existing condition represented by Alt 1. Of these acres, up to 19 (depending on the alternative) would be removed from herd units currently below standard 3. However, the removal of hiding cover does not change the remaining hiding cover percentages in those herd units currently below the Forest Plan threshold. And, the effect of removing hiding cover for road/trail construction/reconstruction is negligible in terms of changing how elk use the landscape.The proposed construction and reconstruction of trails and roads are primarily in locations already heavily roaded.	affected. Two of the four herd units would continue to meet the FP standard. Three acres of hiding cover would be affected within the two herd units not meeting the FP standard. The total acres of hiding cover that would be affected is sufficiently small that the percent hiding cover for each of the eight herd units would remain unchanged and consistent with the existing condition represented by Alt 1. Please see additional information under Alt 2.	herd units would be affected. Three of the five herd units would continue to meet the FP standard. Four acres of hiding cover would be affected within the two herd units not meeting the FP standard. The total acres of hiding cover that would be affected is sufficiently small that the percent hiding cover for each of the eight herd units would remain unchanged and consistent with the existing condition represented by Alt 1. Please see additional information under Alt 2.
Elk security: Big game security forest plan amendment alternative A (no change; keep existing Forest plan standard 4(a)) – existing standard is based on the relationship between	Under the existing condition, only two of the eight elk herd units meet the existing Forest Plan standard	Two of the eight elk herd units would continue to meet the existing Forest Plan standard, even with reductions in open road density. Proposed reductions in	Two of the eight elk herd units would continue to meet the existing Forest Plan standard, even with reductions in open road density. Proposed reductions in hunting	Two of the eight elk herd units would continue to meet the existing Forest Plan standard, even with reductions in open road density.

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
the amount of hiding cover in an EHU and the open road density during big game rifle season.		hunting season road access (with consequent benefits for elk) do not result in any of the sub-standard EHUs moving into compliance with standard 4a. This illustrates the concern that the existing big game security index, as currently defined in the Forest Plan, is not a particularly sensitive indicator of changing elk security conditions.	season road access (with consequent benefits for elk) do not result in any of the sub-standard EHUs moving into compliance with standard 4a. This illustrates the concern that the existing big game security index, as currently defined in the Forest Plan, is not a particularly sensitive indicator of changing elk security conditions.	Proposed reductions in hunting season road access (with consequent benefits for elk) do not result in any of the sub-standard EHUs moving into compliance with standard 4a. This illustrates the concern that the existing big game security index, as currently defined in the Forest Plan, is not a particularly sensitive indicator of changing elk security conditions.
Elk Security: Big game security forest plan amendment alternative B (proposed new Forest Plan Standard 4(a) Proposed new standard focuses on the size and distribution of large habitat blocks to which vehicle access is limited and relies less on obtainable levels of hiding cover and FP Standard 3.	As measured according to Forest Plan programmatic amendment Alternative B, Alternative 1 would result in an average of 48% elk security across that portion of all herd units within the administrative boundary.	Security would increase in six out of the eight elk herd units and would average 51% across all elk herd units combined. This would be an improvement over the existing condition due to road density reductions proposed under alternative 2.	Security would increase in six out of the eight elk herd units and would average 61% across all elk herd units combined. This would be an improvement over the existing condition and alternative 2 due to greater road density reductions proposed under alternative 3.	Security would increase in six out of the eight elk herd units and would average 56% across all elk herd units combined. This would be an improvement over the existing condition and alternative 2 due to greater road density reductions proposed under alternative 4, but would be less of an improvement over that proposed for alternative 3.
Winter Range Thermal Cover - Forest Plan Standard 3 by Elk Herd Unit (maintain 25% thermal cover within elk winter range)	None of the eight herd units meet the FP standard for winter range thermal cover under the existing condition. There would be no change to winter range thermal cover under this alternative. Based on MFWP elk population estimates and trends (FEIS Table 63) resident elk are successfully utilizing the landscape regardless of current thermal cover conditions supporting the	Alternative 2 trail construction could potentially impact a total of 5.7 acres of winter range thermal cover within two herd units. In the Beaver creek EHU 0.2 acres could be impacted by motorized trail construction and 1.5 acres by non-motorized trail construction. In the Poorman EHU 3.6 acres could be impacted by non-motorized trail construction. Trails would only be cleared to a width of 8	Alternative 3 potential impacts to winter range thermal cover are the same as those described for alternative 2; the project will remain consistent with the existing condition represented by Alt 1.	Alternative 4 potential impacts to winter range thermal cover are similar to those described for alternative 2 although total acres of winter range thermal cover that could be impacted would be reduce by 1.5 acres due to less non-motorized trail construction in the Poorman EHU. Based on these findings the project will remain consistent with the existing condition

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	intent of FP Standard 3.	feet therefore the minimal patch size associated with the linear nature of any disturbance to thermal cover due to trail construction would have insignificant effects upon wintering elk or the ability of a forest stand to function as thermal cover. Based on these findings the project will remain consistent with the existing condition represented by Alt 1.		represented by Alt 1.
Grizzly Bear				
NCDE Access Management Guidelines (19/19/68) Open motorized route density (OMRD) guideline is less than or equal to 19% of the area. Total motorized route density (TMRD) guideline is less than or equal to 19 % of the area. Security core (CORE) habitat guideline is greater than or equal to 68% of the area. Open motorized route density (OMRD) guideline is less than or equal to 19% of the area.	Subunit - OMRD/TMRD/CORE Alice creek………..10/18/70 Arrastra creek…….19/21/72 Red Mountain……...26/25/56	Alice creek………..17/13/74 Arrastra creek…….17/18/75 Red Mountain……...24/23/61	Alice creek………...13/9/76 Arrastra creek…….16/17/76 Red Mountain……….21/21/64	Alice creek………...14/9/76 Arrastra creek…….16/17/76 Red Mountain……...20/21/63
Forest Plan standard for open road density in Occupied Habitat	0.46 mi/mi2 –Guideline is met	0.42 mi/mi2 – Guideline is met	0.36 mi/mi2 – Guideline is met	0.34 mi/mi2 –Guideline is met

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Forest Plan Standard is not to exceed 0.55 miles per square mile of road				
Grizzly Bear Summary : Forest Plan standard and interagency NCDE recovery zone guidelines & potential effects associated with key grizzly bear habitats and season of use	Open road density in occupied habitat would remain at 0.46 miles/square mile and would continue to be in compliance with the Forest Plan standard. For the NCDE access management guidelines (19/19/68 guidelines for OMRD, TMRD, and CORE) the Alice creek subunit meets all three guidelines; the Arrastra creek subunit meets OMRD and CORE, but not TMRD and; the Red Mtn. Subunit is in a degraded baseline not meeting any of the three guidelines.	Implementing alternative 2 would go further than alternative 1 in meeting the Forest Plan standard and interagency guidelines; it would reduce open road density in occupied habitat by 0.04 miles/square mile. For the NCDE access management guidelines Alternative 2 would improve TMRD and CORE in all three subunits and OMRD in two subunits. In the Alice creek subunit OMRD would remain within the guideline, but as is common among the action alternatives, would increase as a result of opening acquired lands to motorized use. Both Alice creek and Arrastra creek subunits would meet all three guidelines under alternative 2. Although OMRD, TMRD, and CORE would all improve in the Red Mtn. subunit none of the guidelines would be met and the subunit would continue to have a degraded baseline.	Implementing alternative 3 would reduce open road density and would go further than alternatives 1 and 2 in meeting the Forest Plan standard and interagency guidelines; it would reduce open road density by 0.10 miles/square mile. Alternative 3 does more to improve conditions for each of the subunits, individually as well as collectively than alternative 2. Similar to Alternative 2, Alice and Arrastra creek subunits would meet all three guidelines but the Red Mtn subunit would continue to exceed all three guidelines. Alt3 does the most among the alternatives to limit the season of use, particularly on motorized trails, reducing the duration and distribution of disturbance to bears.	Implementing alternative 4 would reduce open road density in occupied habitat and would go further than alternatives 1 and 2 in meeting the Forest Plan standard and interagency guidelines; it would reduce open road density by 0.12 miles/square mile. For open road density for FP occupied habitat and NCDE access management guidelines the values for Alternative 4 are very similar to those for alternative 3. The potential to impact bears would be greater under alternative 4 however, due to: the extended duration of use compared to alternative 3 on several motorized routes; improvements to the upper portion of Stonewall trail #417 that would remove whitebark pine and increase the footprint of motorized travel along the ridge and; the development of a connector trail between acquired lands and the Alice creek drainage.
Mountain Goat Motor vehicle use in the Stonewall and Red Mountain areas and the connecting ridgeline for mountain goats	Alternative 1 would not change the existing condition. Alternative 1 allows the longest duration for motorized use to potentially impact goats. Trail #417 would	Alternative 2 is not substantially different than Alternative 1 and the potential to impact mountain goats would be similar. Trail #417 the supports the greatest use	Alternative 3 would do the most to reduce the duration of impacts to goats by seasonally restricting motorized use of trail #417 from 9/1-6/30. Decommissioning trail U-330-	Alternative 4 would provide some benefit to goats by restricting motorized use of trail #417 from 10/15 – 6/30. Compared to Alts 1 & 2 the duration of impacts would be

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	remain open without seasonal restrictions and trail U-330-B1, although closed, would continue to support some limited unauthorized use as a	would continue to be managed without seasonal restrictions and U-330-B1 would continue to support some unauthorized single track use. Closing trail #485 to single track motorized use would reduce disturbance improve habitat availability in the head of Copper creek drainage. Common to alts 2, 3, & 4 future motorized use is anticipated to increase more than it would under Alternative 1 due to the development of additional trailheads and connected motorized trail system.	B1 from Stonewall Mtn. to Cotter Basin would also reduce unauthorized single track use. Similar to Alternative 2, trail #485 would be non-motorized reducing the area of motorized disturbance to goats.	shorter although motorized use is typically minimal during the restricted period due to weather and snow. The alternative 4 seasonal restriction has considerably less benefit to goats than would the shorter season of use under alternative 3. Improvements to upper portion of trail 417 would increase motorized use along the ridge with greater potential to disturb or displace goats than Alts 1, 2 or 3. The impacts associated with trails U-330-B1 and 485 would be similar to alternative 3. Closing Cotter mine road 330-B1 under alternative 4 may provide some additional benefit to goats although the area receives very limited use by goats.
Threatened, Endangered and Sensitive (TES) Terrestrial Wildlife Species	Likely to adversely affect grizzly bear. May affect, but not likely to adversely affect lynx or lynx critical habitat. No jeopardy to wolverine. May impact individuals of 3 sensitive species but would not contribute toward a trend for federal listing or a loss of viability (MIIH) determination for all species; would not impact 2 sensitive species	Likely to adversely affect grizzly bear. May affect, but not likely to adversely affect lynx or lynx critical habitat; No jeopardy to wolverine; May impact individuals of 4 sensitive species but would not contribute toward a trend for federal listing or a loss of viability (MIIH) determination for all species; would not impact 1 sensitive species.	Likely to adversely affect grizzly bear. May affect, but not likely to adversely affect lynx or lynx critical habitat; No jeopardy to wolverine; May impact individuals of 4 sensitive species but would not contribute toward a trend for federal listing or a loss of viability (MIIH) determination for all species; would not impact 1 sensitive species.	Likely to adversely affect grizzly bear. May affect, but not likely to adversely affect lynx or lynx critical habitat; No jeopardy to wolverine; May impact individuals of 4 sensitive species but would not contribute toward a trend for federal listing or a loss of viability (MIIH) determination for all species; would not impact 1 sensitive species.
Hydrology & Water Quality and Fisheries (See EIS chapter 3)				
General Hydrology				

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Modeled reduction in sediment delivery from roads to streams (approximately 285 tons/year are currently being delivered to streams)	No change; alternative 1 would not result in a reduction of sediment delivery from roads to streams. Minor improvements could occur over time as part of routine, on-going transportation system maintenance and on a project-by-project basis.	Alternatives 2 would result in an approximate 3-tons/year reduction in sediment delivery from roads to streams due to road storage and decommissioning actions.	Alternative 3 would result in an approximate 6-tons/year reduction in sediment delivery from roads to streams due to road storage and decommissioning actions.	Alternative 4 would provide the greatest opportunity for reduction of sediment delivery from roads to streams. It would result in an approximate 8-tons/year reduction in sediment delivery from roads to streams due to road storage and decommissioning actions.
Number of stream crossings that would be decommissioned and restored (585 stream crossings currently exist)	0	17	128	131
Number of potential culverts removed on storage roads(585 stream crossings currently exist, many of these with culverts)	0	82	49	49
Route miles to be decommissioned within 150 feet of streams (approximately 181 miles of road within 150 feet of streams currently exist)	0	3	34	36
Miles of new motorized route construction or reconstruction within 150 feet of streams	0	0.2	0.7	0.8
Number of new stream crossings associated with new motorized route construction or reconstruction	0	3	3	3
Miles of unclassified routes added to the system within 150 feet of streams (approximately 16 miles of	0	13	1	2

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
unclassified routes currently exist within 150 feet of streams)				
Number of stream crossings on unclassified routes added to the system (53 stream crossings on unclassified routes currently exist)	0	38	6	7
Watersheds containing sediment impaired streams on the Montana 303(d) list	No measurable change; the 11 watersheds containing streams listed by the Montana Department of Environmental Quality (DEQ) as having impaired water quality would not improve and would continue to not fully meet beneficial uses due to sedimentation, among other impairments However, there may be some small improvements in watershed condition across the planning area over time from routine transportation system maintenance activities and expected future project-level stream crossing replacements	4 out of the 11 watersheds containing impaired streams would see reductions in sediment delivery. In addition, 9 out of the 11 watersheds would see other improvements from road decommissioning and stream crossing/culvert removals.	5 out of the 11 watersheds containing impaired streams would see reductions in sediment delivery. In addition, 10 out of the 11 watersheds would see other improvements from road decommissioning and stream crossing/culvert removals.	5 out of the 11 watersheds containing impaired streams would see reductions in sediment delivery. In addition, 10 out of the 11 watersheds would see other improvements from road decommissioning and stream crossing/culvert removals.
Inland Fish Strategy Riparian Habitat Conservation Areas (INFISH RHCAs) – applies to areas west of the Continental Divide in the planning area				
Motorized routes stored or decommissioned in all RHCA categories combined (50 feet to 300 feet on either side of a stream)	0 miles – no reduction in open motorized routes in RHCAs	22 miles or a reduction of approximately 2 percent	40 miles or a reduction of approximately 35 percent	40 miles or a reduction of approximately 35 percent
Stream crossings restored on stored or decommissioned routes in all RHCA categories	0	88	157	157

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
combined (50 feet to 300 feet on either side of a stream)				
New motorized route construction or reconstruction in all RHCA categories combined (50 feet to 300 feet on either side of a stream)	0	0.2	0.8	0.8
Other Water Quality and Fisheries Indicators				
Motorized routes stored or decommissioned (miles) in east-side RHCAs (150 feet from perennial streams) (There are 17 miles of existing open motorized routes in east-side RHCAs)	0	2.4 miles or a 14 percent reduction	3 miles or an 18 percent reduction	3 miles or an 18 percent reduction
Miles of high/moderate risk motorized routes with relationship to fish bearing streams decommissioned	0	18.6	32.4	32.1
Threatened, Endangered and Sensitive Aquatic species	Likely to adversely affect bull trout and likely to adversely affect bull trout critical habitat MIIH for western pearlshell mussel and westslope cutthroat trout	Likely to adversely affect bull trout and likely to adversely affect bull trout critical habitat MIIH for western pearlshell mussel and westslope cutthroat trout	Likely to adversely affect bull trout and likely to adversely affect bull trout critical habitat MIIH for western pearlshell mussel and westslope cutthroat trout	Likely to adversely affect bull trout and likely to adversely affect bull trout critical habitat MIIH for western pearlshell mussel and westslope cutthroat trout
Consistency of alternatives with Forest Plan guidance for threatened, endangered and sensitive fish and aquatic species	Alternative 2 will not move the planning area toward desired conditions and is therefore not consistent with the Forest Plan for TES fish and aquatic species. The current road system condition and its location have negative	Alternative 2 is consistent with the Forest Plan for TES fish and aquatic species and would move the planning area toward desired conditions but less so than under alternatives 3 and 4. Alternative 2 would restore	Alternative 3 is consistent with the Forest Plan for TES fish and aquatic species and moves the planning area toward desired conditions. Considering all action alternatives, Alternatives 3 and 4 are very similar in the improvement expected to	Alternative 4 is consistent with the Forest Plan for TES fish and aquatic species and moves the planning area toward desired conditions. Considering all action alternatives, Alternatives 3 and 4 are very similar in the

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	impacts to fisheries and aquatic species due to culverts that block fish passage and are at risk or failure, and sedimentation from roads within RHCAs that reduce riparian and floodplain connectivity and function.	riparian areas and stream channels, improving Riparian management objectives (RMOs) and reducing negative impacts to fisheries and aquatic species due to culvert removals that block fish passage and are at risk or failure. Alternative 2 would have only an approximate 2% reduction in open motorized routes in RHCA buffers. Alternative 2 would reduce sedimentation from roads to streams that reduce riparian and floodplain connectivity and function, but would not improve conditions as much as alternative 3 or 4	riparian areas and stream channels, improving RMOs and reducing negative impacts to fisheries and aquatic species due to culvert removals that block fish passage and are at risk or failure. Like Alternative 4, Alternative 3 would have an approximate 35% reduction in open motorized routes in RHCA buffers, with removal of hundreds of stream crossings and culverts. While there is less than 1 mile or new route constructed planned under alternative 3 and 4, this route construction would be implemented with all project design features and best management practices to ensure any adverse effects are minimized. Approximately 1 mile of unclassified routes would be added to the system in RHCAs and these would also be subject to routine maintenance and best management practices. Over 32 miles of high risk roads would be decommissioned, slightly more than that proposed for alternative 4. Sedimentation to streams would also be reduced (but not as much as it would under alternative 4) and this will improve riparian and floodplain connectivity and function.	improvement expected to riparian areas and stream channels, improving RMOs and reducing negative impacts to fisheries and aquatic species due to culvert removals that block fish passage and are at risk or failure. Like Alternative 3, Alternative 3 would have an approximate 35% reduction in open motorized routes in RHCA buffers, with removal of hundreds of stream crossings and culverts. While there is less than 1 mile or new route constructed planned under alternative 3 and 4, this route construction would be implemented with all project design features and best management practices to ensure any adverse effects are minimized. Less than 2 miles of unclassified routes would be added to the system in RHCAs and these would also be subject to routine maintenance and best management practices. Approximately 32 miles of high risk roads would be decommissioned, slightly less than that proposed for alternative 3. Sedimentation to streams would also be reduced and this would be greater than for alternative 3 and this will improve riparian and floodplain connectivity and function.

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Quality motorized trail/route system (See EIS chapter 3 section on Transportation and Recreation)				
Miles of roads and routes open for motorized use and overall extent of the system for motorized users	**446 miles of road** The miles of roads available for public use would remain at 446. This would include a number of routes acquired as part of land exchanges as well as unclassified routes. Many of these roads have been determined to not be necessary for forest management. **56 miles of motorized trail** The miles of motorized trail available for public use would remain at 56 miles.	**352 miles of road** The miles of roads available would drop from 446 to 352 miles for a 94-mile reduction. All routes acquired through land exchange and unclassified routes would be included in the route system, closed or removed from the system. Nineteen miles of roads would be allowed to naturally reclaim. Additionally 8 miles would be decommissioned and 135 miles would be put in storage, which means being treated to ensure they are not causing long- term damage, but left on the landscape for possible future use. **92 miles of motorized trail** Designated motorized trails would increase overall but under alternatives 2, 3, and 4 motorized recreationists would lose some riding opportunities currently available to them. In addition, these alternatives each incorporate restrictions on the season of motorized use on designated motorized trails. These losses and restrictions would be offset to some degree by new motorized trail construction and road to trail conversions.	**302 miles of road** The miles of roads available would drop from 446 to 302 miles for a 114 mile reduction from the existing condition. All routes acquired through land exchange and unclassified routes would be included in the route system, closed or removed from the system. 76 routes would be placed in storage and 200 miles decommissioned. No roads would be allowed to naturally reclaim under this alternative. This alternative is an improvement over alternative 2 in terms of miles of road left on the landscape but does not go as far as alternative 4. **47 miles of motorized trail** Designated motorized trails would decrease. Under alternatives 2, 3, and 4 motorized recreationists would lose riding opportunities currently available to them. In addition, these alternatives each incorporate restrictions on the season of motorized use on designated motorized trails. These losses and restrictions would be offset to some degree by new motorized trail construction and road to trail conversions. Alternatives 3 and 4 do not provide any single-track opportunities for	**289 miles of roads** The miles of roads available would drop from 446 to 289 miles for a 157-mile reduction. All routes acquired through land exchange and unclassified routes would be included in the route system, closed or removed from the system. 212 miles would be decommissioned and 82 roads would be placed in storage. Under this alternative there would be no roads allowed to naturally reclaim. This alternative results in the smallest road system of the alternatives. From the transportation perspective, care of this road system would be the least cost to operate. **63 miles of motorized trail** Designated motorized trails would increase but under alternatives 2, 3, and 4 motorized recreationists would lose some riding opportunities currently available to them. In addition, these alternatives each incorporate restrictions on the season of motorized use on designated motorized trails. These losses and restrictions would be offset to some degree by new motorized trail construction and road to trail

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
			motorcycles, but motorcycles could continue to use any motorized trail open to vehicles 50 inches or less.	conversions. Alternatives 3 and 4 do not provide any single-track opportunities for motorcycles, but motorcycles could continue to use any trail open to vehicles 50 inches or less.
Miles of roads available for possible motorized, mixed use	Designating NFS roads for motorized mixed use requires an engineering analysis and must be completed by a qualified engineer. Analysis would occur on a road by road basis after completion of the planning process and implemented over time.			
Miles of new motorized trail construction	0	2	3	4
Overall ease-of-use of the motor vehicle use map for motorized users (level of complexity)	See the row 'Reduce the complexity of the current travel map (Forest Visitor Map)' under the section 'Achievement of Objectives and Purpose and Need' previously in this table			
Quality non-motorized trail/route system (See EIS chapter 3 section on Transportation and Recreation)				
Miles of routes open for non-motorized use only overall extent of the system for non-motorized users	71 miles (all mixed non-motorized use).	120 miles of non-motorized use (19 miles foot and mountain bike; 101 miles foot, stock and mountain bike) The additional miles of non-motorized trail would be comprised of segments of previously closed and open roads in addition to some motorized trails.	158 miles of non-motorized trails (42 miles foot and stock; 18 miles foot and mountain bike; 98 miles, foot, stock and mountain bike). This alternative would close Scapegoat Wilderness portal trails to mountain bikers* The additional miles of non-motorized trail would be comprised of segments of previously closed and open roads in addition to some motorized trails.	130 miles of non-motorized trails (21 miles foot and stock; 18 miles foot and mountain bike; 90 miles foot, stock and mountain bike) The additional miles of non-motorized trail would be comprised of segments of previously closed and open roads in addition to some motorized trails.
Miles of new non-motorized trail construction or miles of new non-motorized routes designated on existing routes	0	31.5	31.5	24

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Overall ease-of-use of non-motorized trail system for non-motorized users (level of complexity)	See earlier entry in this table for 'Reduce the complexity of the current travel map (Forest Visitor Map)' under Achievement of Purpose and Need for each alternative			
Continental Divide National Scenic Trail (See EIS chapter 3 section on Recreation)				
Consistency of alternatives with the intent of the 2009 CDNST Comprehensive Plan and the Forest Plan	No change. The CDNST would continue to be a mix of motorized and non-motorized sections. Approximately 25 percent of the trail would be designated for motorized use and approximately 75 percent for non-motorized use. This is somewhat inconsistent with the Comprehensive Plan that encourages non-motorized use. It is also somewhat inconsistent with Forest Plan direction for management area N1 (Research National Areas) because a motorized portion of the CDNST occurs here (see appendix I) but trails are not allowed in this MA.	No change: same as alternative 1	An approximately 1-mile motorized segment would remain open between NFS road 485 and the junction of the Helmville/Gould trail. This segment is on a road that existed prior to November 10, 1978, thus continued motorized use here would be compliant with National CDNST management direction. The remainder of the CDNST would be open to a mix of non-motorized uses depending upon the segment. This is consistent with the Comprehensive plan. Approximately 2 percent of the trail would be designated for motorized use and approximately 98 percent for non-motorized use, a substantial reduction in motorized use compared to alternatives 1 and 2. Because a programmatic forest plan amendment is proposed for Management Area N1 under this alternative, alternative 3 would be consistent with the Forest Plan. The amendment would allow the management of a non-motorized segment of the	An approximately 1- mile motorized segment would remain open between NFS road 485 and the junction of the Helmville/Gould trail. This segment is on a road that existed prior to November 10, 1978, thus continued motorized use here would be compliant with National CDNST management direction. The remainder of the CDNST would be open to a mix of non-motorized uses depending upon the segment. This is consistent with the Comprehensive plan. This would provide motorized access to the east end of trail 467 and the northwest terminus of the Cellar/Ogilvie OHV trail (312) managed by the Helena National Forest . The remainder of the CDNST would be open to foot, stock, and mountain bike traffic including the 3 miles of proposed new construction that would reroute the trail around private property and move trail users off segments of the CDNST co-located with roads open to highway legal vehicles.

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
			CDNST in this MA	Approximately 2 percent of the trail would be designated for motorized use and approximately 98 percent for non-motorized use, a substantial reduction in motorized use compared to alternatives 1 and 2. Because a programmatic forest plan amendment is proposed for Management Area N1 under this alternative, alternative 4 would be consistent with the Forest Plan. The amendment would allow the management of a non-motorized segment of the CDNST in this MA.
Other Resources				
Socioeconomics (See EIS chapter 3)				
Access to suitable timber land	No change	No perceptible change	No perceptible change	No perceptible change
Public access for fuel wood	No change	No measurable change	No measurable change	No measurable change
Approximate overall cost of Implementation (road and trail maintenance, construction and reconstruction, decommissioning, storage and noxious weed control	No change; routine maintenance of current system would continue, no cost associated with new construction, storage or decommissioning; approximately $1,426,000	Least expensive, compared to alternatives 3 and 4; approximately $2,031,000	Most expensive; approximately $2,745,000	Slightly less expensive than alternative 3; approximately $2,690,000
Impact to local economy	No change	At the travel planning area scale, changes in the types and quantity of allowed uses under the travel plan may impact specific vendors or businesses to some degree positively or negatively, but the differences between all alternatives are not great enough that it would be expected to cause a substantial shift from the current existing condition. With all alternatives, the road system would remain at levels that would allow the forest access to most suitable timber lands over the planning		

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
		horizon, although some variation does exist between alternatives. Public access to firewood is anticipated to remain adequate to meet public demand overall, although there are differences between alternatives in the timing and location of open roads available to collect firewood. Motorized and non-motorized based recreation would continue to greatly contribute to the local economies within the economic impact area and the smaller travel planning area.		
Fire and Fuels (See EIS chapter 3 Fire and Fuels section)				
Access for wildfire suppression	No change; the current situation allows for pre-positioning of firefighting resources across the roaded areas of the travel planning area	Proposed changes under any alternative would allow for pre-positioning of firefighting resources across the roaded areas of the planning area. With fewer open roads, response time could increase and therefore fire managers would update strategies and tactics to suppress fires in the planning area		
Cultural Resources (See EIS Chapter 3 section on Cultural Resources)	Alternative 1 does not increase protection of cultural resources but does provide access to cultural resources for purposes of monitoring, scientific investigation and potentially interpretation.	Overall, reducing the number of motorized roads and trails available to the public in the travel planning area would benefit cultural resources. Motor vehicle travel restrictions prevent easy public access to archaeological sites and historic ruins that are vulnerable to vandalism, artifact collecting, arson, and other depreciative behavior. Overall, Alternative 2 would provide more protection benefit to cultural resources over Alternative 1. It would provide a reasonable amount of access for people wishing to visit historic ruins.	Overall, reducing the number of motorized roads and trails available to the public in the travel planning area would benefit cultural resources. Motor vehicle travel restrictions prevent easy public access to archaeological sites and historic ruins that are vulnerable to vandalism, artifact collecting, arson, and other depreciative behavior. Overall, Alternative 3 would provide more protection benefit to cultural resources over Alternatives 1 and 2 while still providing a reasonable amount of access for people wishing to visit historic ruins.	Overall, reducing the number of motorized roads and trails available to the public in the travel planning area would benefit cultural resources. Motor vehicle travel restrictions prevent easy public access to archaeological sites and historic ruins that are vulnerable to vandalism, artifact collecting, arson, and other depreciative behavior. Overall, Alternative 4 would provide more protection benefit to cultural resources over Alternatives 1, 2 and 3 while still providing a reasonable amount of access for people wishing to visit historic ruins.
Noxious Weeds (See EIS chapter 3)				
Risk of noxious weed introduction and spread by motorized routes	No change	Motorized routes generally increase the spread of weeds. With fewer miles of motorized routes and more miles of non-motorized, stored and decommissioned routes, alternatives 2, 3, and 4 would be expected to reduce the risk of invasive plant species introduction and spread compared to alternative 1. Alternative 4 would result in the fewest acres of weed infestations within 300 feet		

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
		of motorized routes and Alternative 1 would continue to have the highest. All action alternatives would have a lower risk of weed spread than the existing condition. Short-term adverse impacts would be minimized through the implementation of project design features.		
Approximate acres with documented invasive plant presence within 300 feet of motorized routes	6,010	5,830	5,382	5,356
Minerals (See EIS chapter 3)	Alternative 1 is the most favorable for mineral exploration and development activities as it includes the greatest number of open motorized routes.	Alternative 2 is less favorable than alternative 1 but better than Alternative 3 because there are fewer miles of route that would be decommissioned. Specific permitted projects are negatively affected by Alternatives 2, 3 and 4.	Alternative 3 is less favorable than alternative 2 but better than alternative 4 in the level of restrictions on access to sites; Specific permitted projects are negatively affected by Alternatives 2, 3 and 4.	Alternative 4 restricts the most miles of routes due to decommissioned routes, when compared to alternatives 1, 2 and 3. Specific permitted projects are negatively affected by Alternatives 2 and 3.
Soils (See EIS chapter 3)	Alternative 1 has about 224 total miles of routes open to wheeled motorized use on sensitive soils within the Blackfoot Planning area.	Alternative 2 would have about 222 route miles accessible to wheeled motorized use on sensitive soils, 2 miles less than Alternative 1.	Alternative 3 would have about 165 route miles accessible to wheeled motorized use on sensitive soils, 59 miles less than alternative 1.	Alternative 4 would have about 160 route miles accessible to wheeled motorized use on sensitive soils, 64 miles less than alternative 1.
Threatened, Endangered and Sensitive Plants (See EIS chapter 3)	Highest level of Missoula phlox and whitebark pine populations within 300 feet of motorized routes, with potential to be adversely impacted. There are no federally listed threatened or endangered species with potential to occur in the planning area. Determination for all sensitive plant species with potential to occur in planning area: May impact individuals but would not contribute toward a trend for federal listing or a loss of viability (MIIH) determination	No perceptible change in level of Missoula phlox and whitebark pine populations within 300 feet of motorized routes. MIIH determination for all sensitive species	Reduction in level of Missoula phlox and whitebark pine within 300 feet of motorized routes, reducing the potential for adverse impacts. MIIH determination for all sensitive species	Reduction in level of Missoula phlox and whitebark pine within 300 feet of motorized routes is the same as alternative 3, reducing the potential for adverse impacts. Under alternative 4, approximately 2 acres of Missoula phlox would be within 300 feet of new construction of a non-motorized trail. The new trail would also pass through a whitebark pine stand (#40). There is potential for some removal of white bark pine for

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	for all species			proposed trail reconstruction along the CDNST and Stonewall trails; project design features would be applied to ensure adverse impacts are minimized.
Sensitive plant populations within 300 feet of motorized routes (Missoula phlox and white bark pine)	17 acres – Missoula phlox 14 miles – whitebark pine	Slight 0.10-acre reduction for Missoula phlox; no change for whitebark pine	Approximate 2-acre reduction for Missoula phlox and 9-mile reduction for whitebark pine	Same as alternative 3
Inventoried Roadless Areas (see EIS chapter 3)	No change to unroaded character in planning area IRAs or the Specimen Creek unroaded expanse; no effect to overall wilderness attributes 76 miles of motorized routes and 59 miles of non-motorized routes would remain in IRAs and the Specimen Creek unroaded expanse.	Routes open to wheeled motorized vehicles within the IRAs and Specimen Creek unroaded expanse would decrease by approximately 18 miles. The miles of non-motorized routes would increase by about 18 miles. All action alternatives would enhance wilderness attributes of IRAs and Specimen Creek unroaded expanse due to a reduction in miles of motorized use, increase in non-motorized routes and the delineation of routes. By consciously designating these routes, management would improve. All action alternatives propose some level of road storage and decommissioning. While this level varies by alternative, these actions would improve the undeveloped character of these IRA's over time. Opportunities for solitude and unconfined primitive	Routes open to wheeled motorized vehicles with the IRAs and unroaded expanse would decrease by approximately 45 miles. The miles of non-motorized routes would increase by about 24 miles. All action alternatives would enhance wilderness attributes of IRAs and Specimen Creek unroaded expanse due to a reduction in miles of motorized use, increase in non-motorized routes and the delineation of routes. By consciously designating these routes, management would improve. The Nevada Mountain roadless area would improve with the designation of the Helmville-Gould trail as non-motorized. All action alternatives propose some level of road storage and decommissioning. While this level varies by alternative, these actions would improve the undeveloped character of these	Routes open to wheeled motorized vehicles within the IRAs and unroaded expanse would decrease by approximately 10 miles. The miles of non-motorized trails would increase by about 12 miles. All action alternatives would enhance wilderness attributes of IRAs and Specimen Creek unroaded expanse due to a reduction in miles of motorized use, increase in non-motorized routes and the delineation of routes. By consciously designating these routes, management would improve. . All action alternatives propose some level of road storage and decommissioning. While this level varies by alternative, these actions would improve the undeveloped character of these IRA's over time. Opportunities for solitude and

Comparison Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4
		recreation would increase with a reduction in motorized use.	IRA's over time. Opportunities for solitude and unconfined primitive recreation would increase with a reduction in motorized use	unconfined primitive recreation would increase with a reduction in motorized use.

[1] this is the cumulative outcome of the proposed changes and past decisions

* Closing the portal trails to mountain bikers would reduce conflict among non-motorized user groups and minimize wilderness trespass from wheeled non-motorized recreationists.

Chapter 3. Affected Environment and Environmental Consequences

Introduction

This chapter presents the relevant resource components of the existing environment – the baseline environment. It describes the resources of the area that would be affected by the alternatives. This chapter also discloses the environmental effects of implementing the alternatives. These form the scientific and analytical basis for comparing the alternatives described in chapter 2.

Chapter 3 explains the basic components of the analysis followed by a section on each resource. This should provide the reader a better understanding of the overall motorized routes and designations for wheeled motorized vehicles within the Blackfoot travel planning area. Acre and mileage totals are approximate within tables and text due to rounding.

The purpose of this analysis is to compare alternatives, not to make predictions about the future. The analysis in this chapter focuses on the direct and indirect effects of the proposed changes to the current designated system. For existing roads and motorized trails, direct and indirect effects would result from public wheeled motorized use on these roads and trails (and within 300 feet of them). For existing non-motorized trails, direct and indirect effects would result from public non-motorized use on these trails such as for hiking or mountain biking. Where new roads or trails are proposed, the direct and indirect effects of this construction are evaluated as well as the use of these new trails or roads over time. Under cumulative effects, it focuses on the effects of the whole designated system in combination with other relevant, past, present and reasonably foreseeable future actions,

This FEIS looks at effects within the Blackfoot travel planning area. The effects of proposed changes to the Blackfoot transportation system were aggregated rather than describing the site-specific effect at each road or trail, unless necessary for a particular sensitive resource or concern area. For instance, specialist's reports describe the overall effects of reducing or allowing places people could drive instead of listing every route and predicting the effects at a particular site.

Most specialists used Geographic Information System (GIS) to calculate the miles and areas affected, or to model habitats. If specialists used models other than GIS, it is described in their report.

It was assumed that motorized use would occur where it is proposed. In doing so, the effects analysis describes the effects resulting from the change between where people are driving now (alternative 1) and where people would drive (alternative 2, alternative 3 and alternative 4).

Consistency with the Forest Plan and with Other Relevant Laws and Policy

Each resource section in this chapter includes conclusions about how the proposed alternatives would or wouldn't be consistent with the Forest Plan and relevant laws and regulations that pertain to that resource. This analysis considers the effects of public motorized use on designated roads and trails and distinguishes this from motorized use off designated roads and trails. The minimization criteria from the 2005 Travel Rule apply to this off-road use only. For this analysis, because off-road motorized use has been prohibited in the planning area since 2001 and will continue under any alternative selected, these criteria apply just to motorized use that would be allowed within 300 feet from the edge of designated routes. Each resource analysis in this chapter evaluates the effects of this proposed use by alternative. At the end of this chapter, we present a summary of whether this off-road use within 300 feet of designated route would be minimized and if this use would be appropriate.

Affected Environment

An effects analysis starts by describing the affected environment. As the name implies, this section describes those parts of the environment or planning area that would change as a result of implementing the action alternatives. The Council on Environmental Quality describes it this way:

"The environmental impact statement shall succinctly describe the environment of the area(s) to be affected or created by the alternatives under consideration. The descriptions shall be no longer than is necessary to understand the effects of the alternatives" (40 CFR 1502.15).

In this project, land managers for the Helena National Forest propose to close some roads and trails to motorized use. Wheeled motorized vehicle travel off-route, with the exception of for camping and parking associated with camping, would be allowed within 300 feet of designated system routes, including roads and trails (unless signed otherwise or specifically closed) as long as no new permanent routes are created by this activity; no damage to existing vegetation, soil, or water resource occurs; travel off-route does not cross streams, and travel off-route does not traverse riparian or wet areas. Parking safely within 30 feet from the designated route edge would also be allowed, as described in more detail in chapter 2.

Past Actions

The interdisciplinary team considered the effects of past actions as part of the existing condition. The current conditions are the sum total of past actions. The CEQ recognizes "agencies can conduct an adequate cumulative effects analysis by focusing on current aggregate effects of past actions without delving into the historical details of individual past actions" (Council on Environmental Quality 2005). Innumerable actions over the last century and beyond have shaped the Helena National Forest's current designated road system within the Blackfoot travel planning area. Attempting to isolate and catalog these individual actions and their effects would be nearly impossible. By looking at current conditions, the effects of past human actions and natural events, regardless of which event contributed to those effects are captured. Listing the past actions, however, can show trends. On balance, some past actions increased the amount of motorized use in the Blackfoot travel Planning Area, and others decreased it.

Environmental Consequences

The impact analysis and conclusions contained in this chapter were based on forest staff knowledge of the resources and site, reviewing existing literature and agency studies, information provided by specialists within the Forest Service and other agencies, and professional judgment. The methodology section for each resource describes additional specific data collection or analysis or other methods used for that resource.

We reflect and build upon Forest staff knowledge and experience managing public motorized use on the Forest as a whole and in this planning area specifically, over the last several decades.

Potential impacts in this chapter are described in terms of type (direct, indirect, cumulative and are the effects beneficial or adverse?); context (are the effects site specific, local, or even regional?); duration (are the effects short term or long term?); and intensity.

Direct effects are caused by the action and occur at the same time and in the same locations as actions that cause them. Indirect effects are those caused by the action but that occur at a later time or in a different location than the actions that were their cause. Cumulative impacts result from the additive impacts of this project with past, present, and reasonably foreseeable future actions in or near the area.

Effects can be both beneficial and detrimental (40 CFR 1508.8). For example, for this travel management project, closing roads to motorized use could improve wildlife habitat (beneficial effect for wildlife species) and reduce the amount of motorized recreational opportunities (detrimental impact to riders).

The regulations do not require agencies to separate the direct and indirect effects, so in this document we describe them together by resource. Cumulative effects have their own section by resource.

For purposes of this analysis, short-term effects are those expected within the next 1 to 10 years (throughout the course of project implementation) and long-term effects are those that are expected between 10 and 20 years or more (after implementation is complete) unless specifically defined in individual resource sections that follow.

Cumulative Effects

The definition of cumulative impact according to the Council on Environmental Quality is:

‘Cumulative impact’ is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR 1508.7).

To be cumulative, effects must overlap in space and time. Cumulative impacts are important because they could cause a tipping point, either beneficial or detrimental. To analyze cumulative effects, the interdisciplinary team looked at the effects from this proposal and added them to the effects from past, present, and reasonably foreseeable future actions.

Reasonably Foreseeable Actions

Courts have interpreted a “reasonably foreseeable future action” as one that has been proposed and is in the planning stages. To analyze the cumulative effects of present and reasonably foreseeable future actions, each resource specialist looked at the list of projects in appendix D. They identified the ones expected to cause effects to their resource, at the same time and in the same place as effects from the proposed action or alternatives. Some specialists analyzed additional actions that pertained only to their resource.

Consistency with Adjacent National Forest Travel Management Planning

There are two areas within the Blackfoot travel planning area that share a common boundary with an adjacent national forest. The first area is T15N R10W with the Lolo National Forest, where there is shared management of trail #483. The actions proposed for this trail in all three alternatives are consistent with the management of the trail when it crosses into the Lolo National Forest and then back onto the Helena National Forest. The Helena and Lolo National Forests have always shared in the maintenance of this trail and would continue to do so under implementation of any of the alternatives.

The second area is in T16N R7W; there is a trail junction between the Continental Divide National Scenic Trail #440 and trail #266 that occurs on the Lewis & Clark National Forest. Actions proposed for both trails under any of the alternatives are consistent with both Forest Plans and management of trail #266 as it is being managed on the Lewis & Clark National Forest.

Specialist Reports

This Final Environmental Impact Statement incorporates by reference the resource specialist reports in the project record (40 CFR 1502.21). These reports contain the detailed data, executive summaries, regulatory framework, assumptions and methodologies, analyses, conclusions, maps, references, and technical documentation that the resource specialists relied upon to reach their conclusions. These reports are summarized in this chapter.

Amendments to the Helena National Forest Plan

A proposed programmatic big game security Forest Plan amendment is a component of this analysis as described in chapter 2 and appendix F. By law, proposed actions must be consistent with the Forest Plan or the Plan must be changed. Amendments to the Forest Plan can have effects because they propose changes in the management of the forest. Another Forest Plan amendment would also be necessary to address trails within Forest Plan Management Area N1 (Research Natural Areas) and R1 (Undeveloped land suited for dispersed recreation), as discussed in chapter 2.

Project Record

As also stated in chapter 1, the Blackfoot Non-Winter Travel Plan project record is referenced in an effort to keep this document brief and concise as per 40 CFR 1502.21. The project record contains a variety of documents, including, but not limited to: specialists' reports, supporting documents, maps and GIS analysis, literature, and other process-related documents.

Transportation System

Affected Environment

Existing Condition

Transportation System

The Blackfoot travel planning area is accessed by an extensive road and trail system. There are currently 446 miles of National Forest System routes in the Blackfoot travel planning area open to public motorized use. Most of the early roads were developed primarily for mining and grazing activities. Many of these roads were first used in the mid–1800s as wagon roads and then improved in the early 1900s to accommodate motorized vehicles. Since the 1950s, roads have been built to access forest stands for commercial timber sales. These roads have been built to a higher standard than the old mining and grazing roads. The road system now consists of a mixture of old and new roads as well as acquired roads. Many of the older roads are in disrepair.

The majority of the roads in the Blackfoot travel planning area are single-lane, native-surface roads. There are roads that are under the jurisdiction of counties, state, private landowners and the United States Forest Service. Major road segments include Road 330 (Copper Creek), Road 1163 (Nevada Ogden) and Road 4106 (Beaver-Dry Creek).

Motorized travel tends to be higher during summer, holiday weekends and around the opening of big game rifle season; otherwise, traffic use tends to be low. Use has been increasing and we expect this trend to continue into the future. Refer to the Recreation section for more information on use. Table 9 displays the miles of roads within the planning area by maintenance levels and identifies primary road segments.

To help the reader develop a perspective for the road locations, the analysis area has been divided into 4 geographic quadrants. The area is divided east and west by Highway 200 which runs through the entire planning area, and is divided north and south approximately by the northern boundary of the 5th Hydrologic Unit Code (HUC 5) Blackfoot River-Keep Cool Creek Watershed. Table 9 lists the planning area HUC 5 watersheds, and the primary roads that either run through, or originate in, that watershed. Appendix G displays a map of the existing road system. Table C-1 in appendix C displays information on each road addressed in the analysis.

Table 9. HUC 5 Watersheds and primary roads by quadrants

Quadrant	HUC 5 Watershed	Primary Roads
Northeast	A portion of the Blackfoot River Headwater	1815 - Meadow Creek
	Lower Dearborn River	1841 - Hogum Creek
	A portion of Middle Fork Dearborn River	293 - Alice Creek
	Upper Little Prickly Pear Creek	4087 - Mike Horse Mine Extension
	Little Prickly Pear Creek	4108 - West Flesher
Northwest	A portion of Middle Fork Dearborn River	330 - Landers Fork
	A portion of the Blackfoot River Headwaters	1882 - Indian Meadows
	Landers Fork	
Southeast	Blackfoot River-Keep Cool Creek	601 - Stemple Pass (County Road)
	Lower Little Blackfoot River	329 - Dalton (Mixed Jurisdiction)
	Nevada Creek	1163 - Nevada-Ogden
		1892 - Sauerkraut
Southwest	Lower North Fork Blackfoot River	4106 - Beaver Creek-Dry Creek (Mixed Jurisdiction)
	A portion of Blackfoot River Keep Cool Creek	1800 - Sucker Keep Cool

Unclassified Roads

We conducted field reviews and collaborated with user groups to identify unclassified routes located within the planning area. These have been incorporated into this analysis. There are approximately 60 miles of unclassified routes in the planning area, 20 miles of which are open to motorized use. The majority of roads that fall into this category are dead end roads and are less than 1 mile long. The unclassified roads identified as part of this analysis are listed in table C-1 in appendix C. After the transportation planning process is complete, any unclassified roads that exist on the landscape that were not identified prior to or during this process would be prohibited from motorized use and actions taken to mitigate environmental concerns related to that route.

Road Closures

Since adoption of the Helena Forest Plan in 1986, roads have been closed across the forest and in the analysis area for a variety of reasons. Closures are often with gates but also by contouring, barrier placement, and ripping/seeding. Closures are either yearlong or seasonal. Currently, 57 miles are closed yearlong to motorized use. Examples of seasonal closures include spring closures to protect the road surface from rutting during the wet time of the year, or hunting season closures to provide for big game security during the general rifle season.

Road Conditions

Road conditions vary across the analysis area with many factors influencing road surfaces including amount of use, type of use, maintenance level, type of surface and weather. Forestwide maintenance plans are developed annually and maintenance funding applied in accordance with targets assigned and other priorities set by engineering and line officers. Level of Service (formally referred to as Traffic Service Levels) for the analysis area are adequate for the amount of traffic occurring and are expected to continue to provide adequate service into the future, accounting for area population growth and potential displacement. Levels of Service are evaluated and adjusted as necessary as part of normal management activities.

Road Maintenance

Road maintenance guidelines are prescribed in Forest Service Handbook 7709.58 Transportation System Maintenance and Forest Service Manual 7700 -Transportation System, Chapter 7730 – Operation and Maintenance. Road maintenance levels and the level of attention a particular road receives annually can vary widely. Forest Service roads are divided into five maintenance level categories that define their level of service and required maintenance standard. The range goes from level 1 roads that are closed and require only custodial maintenance, to level 5 roads that are aggregate-surfaced or paved. Road maintenance is typically performed annually on primary county and NFS roads, and less frequently on other roads depending on maintenance level and funding availability. Some roads that are in poor locations have greater need for maintenance than others and would receive more attention. Currently, road maintenance dollars are allocated to each Forest from the Washington Office based on a weighted share system where Forests with the highest roaded land area and the highest level of recreational use receiving the most road maintenance funding. How maintenance is funded and prioritized is described in more detail in the transportation report in the project record. Road maintenance funds can also come from partnerships and special projects.

Motor Vehicle Use Maps and Law Enforcement Complexity

The Helena National Forest has identified that the complexity of its current Forest visitor use map is high; resulting in confusion for forest users and non-compliance (violations). There are 12 different seasonal restrictions governing the use of the roads and trails in this area.

Environmental Consequences

Methodology

The data we used to describe the existing condition for the road system was used to evaluate the effects of each alternative. The existing condition was developed using field verification of roads and trails (particularly those with issues or concerns identified by the IDT or the public), INFRA and GIS data and outcomes from the Forest Roads Analysis Process (RAP). The alternatives were evaluated on the following criteria:

- Transportation System - How the alternative would change the open transportation system, and our ability to conduct maintenance.
- Road conditions - How the alternative would affect road and trail conditions.
- Complexity of the current Forest Visitor map
- Right-of-way concerns

- Failure of roads to provide public access to the national forest
- To what degree the alternative would provide for a quality motorized trail system
- How effectively the alternative would provide for future vegetation management needs
- Treatment of the Continental Divide National Scenic Trail (CDNST) National Direction

Roads Analysis Process (RAP)

The Helena Roads Analysis Process (USDA Forest Service 2004) was used to inform this process. The 2004 RAP divided all of the roads in the area into nine categories (combinations of high, medium or low value, and high, medium or low concern) to identify the road system necessary to effectively manage the Helena National Forest. The Helena National Forest Roads Analysis Report (USDA Forest Service 2004) is located in the project record.

Inventory correction and changes in land ownership have resulted in adjustments to the roads inventory since the 2004 RAP. These updated data were incorporated into this analysis and supplements information from the 2004 Roads Analysis Process.

The roads analysis recommended that roads rated low value-high concern (LVHC) be removed from the road system. There are two roads in this area that were classified in the roads analysis as LVHC; roads 4080 and 601-N1. During this analysis it was determined that both roads were incorrectly classified and are in fact considered to be High Value-High Concern and are necessary for effective forest management. Road 4080 is proposed for decommissioning from mile post 0.55 to 6.1 for resource protection. The remainder of that road would be managed as part of this decision. Road 601-N1 travels in and out of private land and also connects to county roads. To continue to provide access to county roads and private lands, this road would remain part of the National Forest System in all alternatives.

Travel Management

In addition to information in the Blackfoot portion of the Helena National Forest Roads Analysis Report (USDA Forest Service 2004) this Blackfoot travel planning effort was used to update information regarding route statistics, existing conditions, and uses. It also added information on new acquired routes from 2009 and 2011. This work was completed through collaboration with user groups starting in 2006 and conforms to the process as outlined in FSM 7700 and FSH 7709.55.

2001 Tri-State Off-Highway Vehicle (OHV) Decision

The Off-Highway Vehicle Record of Decision and Plan amendment for Montana, North Dakota, and portions of South Dakota was signed in January 2001. This 2001 Tri-State OHV decision (located in the project record) has been incorporated into this analysis.

Incomplete and Unavailable Information

It is possible that there are existing unclassified routes that were not identified on-the-ground for this analysis. Unclassified roads that exist that were not identified prior to or during this process would be prohibited from motorized use and necessary actions taken to mitigate environmental concerns as described in chapter 2.

Spatial and Temporal Context for Effects Analysis

The area for evaluating cumulative effects is the boundary of the Lincoln Ranger District and the National Forest System roads wholly or partially within the boundary.

The temporal boundary varies. There are certain actions under alternatives 2, 3 and 4 that would take place almost immediately upon the signing of the record of decision such as the production of the MVUM which would show the routes designated for public use. Other actions requiring physical activities on the ground would take place more slowly and would be done in accordance with an implementation plan that would be developed upon the selection of the alternatives. The implementation would take place as the budget process allows and as opportunities for partnerships arise

Past, Present, and Foreseeable Activities Relevant to Cumulative Effects Analysis

Past, present and foreseeable future actions relevant to this analysis are described in appendix D, and those most relevant to this transportation analysis are discussed briefly under each alternative later in this section.

Effects Common to All Alternatives

Road Conditions

The general maintenance level (see glossary) and condition of open roads and trails would not change by alternative. There is a Forestwide recognized backlog in road maintenance. Implementing alternatives 2, 3 or 4 would increase the number of closed, stored and decommissioned road miles. While fewer open-road miles suggests an improvement in overall maintenance, the reality is that less than 0.25 miles of currently higher maintenance roads are being proposed for closure under any alternative; therefore, maintenance needs and backlog would largely be the same for all alternatives, including alternative 1, the no-action alternative. It is assumed that current maintenance and reconstruction activities would continue as they have in the recent past. Project-specific work as well as partnerships would continue to provide opportunities for additional road maintenance and improvements.

Rights-of-Way

Some roads and trails within the planning area cross private land where there is no recorded right-of-way or easement. Efforts to secure rights-of-way across these segments are ongoing and would continue under any alternative selected.

Cumulative Effects

Past travel management decisions in surrounding areas have closed many roads and trails on public land to motorized vehicles. Road and trail closures on other parts of the Helena National Forest as well as the Lewis and Clark National Forest have redirected some traffic to the Lincoln Ranger District. In addition, the increase in local populations, the close proximity to Missoula, Montana, and the enhanced dependability of trucks and other OHVs has resulted in increased use on the roads and trails in this area. Traffic use tends to be higher during summer holiday weekends and around the opening of big game rifle season; otherwise, traffic levels tend to be low. The road-use trend would be the same for all alternatives; therefore this will not be discussed by alternative.

Effects Common to All Action Alternatives

Transportation System

All of the action alternatives increase the number of miles of closed and decommissioned roads and provide clarification regarding currently unclassified routes. To what degree these actions would occur is described in more detail under each alternative later in this section.

Road Conditions

Road closures could potentially shift additional use to the remaining open roads increasing maintenance needs on those roads. Other funding sources, such as future proposed projects, would be expected to provide additional opportunities for road closures, decommissioning or for putting roads into storage. It is assumed that roads proposed for storage would be stored at level 3S and roads proposed for decommissioning would be at a level 4 (table 4).

Motor Vehicle Use Map and Law Enforcement Complexity

All action alternatives would result in the production of a motor vehicle use map, which would supplement the existing Forest Visitor Map and is easier for Forest visitors to use to determine where legal motorized use would be allowed. We anticipate there would be a short-term need for increased enforcement as visitors become familiar with the motor vehicle use map. Enforcement needs are expected to decline over time.

Failure to Provide for Public Access/Minimizing Exclusive Use

Approximately 8 miles of roads within the planning area fail to provide public access to National Forest System lands because a part of the road required for access falls on lands of other ownership with no Forest Service easement in place; therefore, they are proposed for storage under alternative 2, 3 and 4. Other roads are also proposed for storage under alternative 2 totaling 135 miles, under alternative 3 totaling 76 miles and under alternative 4 totaling 82 miles. Placing these roads in storage would retain them for future resource management needs. These 8 miles of routes are reflected in table 10 that follows.

Table 10. Roads proposed for storage under the action alternatives that fail to provide public access

HUC5 NAME	Road ID	BMP[1]	EMP[1]
Blackfoot River Headwaters	4084	0.105	1.711
	4084-A1	0	0.767
Blackfoot River-Keep Cool Creek	1892-D4	0	0.400
Nevada Creek	4047	0	0.299
	4047-A1	0	2.313
	4047-B1	0	0.824
	4047-C1	0	0.202
	4047-C2	0	0.382
	4047-D1	0	0.643

[1]BMP= Beginning mile post; EMP = ending mile post

Ensure Access for Future Resource Management

As part of this transportation planning process an evaluation was made to determine the necessary road system to meet future needs for vegetation management. All four alternatives retain a road system that accesses every part of the analysis area on the higher use roads, and provide for adequate future resource management; more detail is provided in the Socioeconomics and Fire and Fuels sections of this chapter.

Short segments of new road construction were identified where considered necessary to improve management. Those segments are in the Blackfoot River Headwaters, the Upper Little Prickly Pear Creek and in the Blackfoot River-Keep Cool Creek HUC 5 watersheds. These would be proposed under alternatives 2, 3 and 4 and are in response to the recognized opportunity and need to improve visitor experience by providing loop trail opportunities.

Programmatic Forest Plan Amendment for Management Area N1 (Granite Butte proposed research natural area) and R1 (Nevada Mountain)

As described in detail in chapter 2 and appendix I implementing any of the action alternatives would require a programmatic forest plan amendment for management area N1 and/or R1 to allow existing trail segments in these areas. This would have no impact on the transportation system because they are existing routes and

Programmatic Forest Plan Amendment for Big Game Security

Each action alternative would require programmatic forest plan amendments for trails in management areas N1 and R1 and also for big game security. These are described in detail in chapter 2 and appendix F and I. These would have no impacts on the indicators used in this analysis for the transportation system.

Alternative 1 – No Action

Direct and Indirect Effects

No changes would be made to the existing system of available public motorized routes within the analysis area.

Transportation System

There would continue to be approximately 446 miles of National Forest System roads in the planning area road open to public motorized use, either year-round or seasonally.

Existing roads that are infrequently used or are closed would see a slow natural reclamation. While natural reclamation would likely occur over time the road prism would remain on the landscape. Roads that are unclassified or acquired through land acquisition may not meet current design standards and could possibly contribute to resource damage over time. Off-route use for the purpose of dispersed camping within 300 feet of a designated route would continue at the current rate, as allowed for under the 2001 Tri-State OHV rule.

Unclassified Roads

Alternative 1 would leave many roads unclassified and individual problems with these roads would have to be addressed on a case-by-case basis. Unclassified roads in alternative 1 that show evidence on the ground of frequent motorized use would keep their current status as open to traffic when they can be accessed as decided in the 2001 Tri-State Off-Highway Vehicle Decision. Routes that are currently not part of the National Forest System and are being managed as open would remain on the landscape as open. Creation of new unclassified routes would likely occur at a low rate but these new routes would be considered closed and treated accordingly.

Motor Vehicle Use Map Complexity and Enforcement

Travel management for this alternative is complex. There are several different seasonal restrictions governing the use of the roads and trails. In some locations, existing roads and trails are open to motorized vehicles, including unauthorized unclassified routes, based on the 2001 Tri-State OHV Decision which allows for motorized use where there is evidence of previous motorized use. Law enforcement efforts would continue to be addressed as violations are reported.

Failure to Provide for Public Access/Minimize Exclusive Use

Roads that fail to provide public access to the National Forest due to jurisdictional concerns would continue to be open to highway legal vehicles even though the roads have been determined to be unnecessary for long-term management.

Quality Motorized Route System

There are approximately 56 miles of motorized trails in the planning area and 446 miles of open roads. Per the 2001 Tri-State OHV Decision, any unclassified routes that currently show evidence of motorized activity would continue to be open to this use. Travel would continue to be restricted to travel within the road prisms. This alternative would provide the greatest number of miles of routes open to wheeled motor vehicle use compared to alternatives 2, 3 and 4.

CDNST

There would be no change in the management of the CDNST. It would continue to be managed for a mix of motorized and non-motorized use.

Cumulative Effects

Road conditions, as described in the Affected Environment section, indicate most routes are in fair to good condition with some individual routes in poor condition. Past travel management decisions in the surrounding NFS lands have closed many roads and trails to motorized vehicles. The road and trail closures in the Elkhorn Mountains, North Belts, and surrounding national forests resulted in an increase in some non-local visitors (including visitors from Gallatin and Lewis and Clark counties) using the Helena National Forest for recreational purposes. In addition, the increase in local populations and enhanced dependability of trucks and other OHVs has resulted in increased use on the roads and trails in this area; but at this time, the traffic increase has not adversely affected the levels of service on any of the NFS roads or trails. Traffic use tends to be higher during summer holiday weekends, and around the opening of big game rifle season. The 2001 Tri-State OHV Decision restricted wheeled motorized vehicles with few exceptions to existing roads and trails.

Past management activities within the analysis area such as timber and grazing management, fire and watershed restoration efforts have affected the transportation system in the short-term by temporarily closing a section of road for several days or weeks. Some roads in the analysis area have been closed as mitigation for timber sales, but since there are alternate routes available to most of the areas, there has been limited loss of public access to National Forest System land.

Closures resulting from past planning efforts on other parts of the Helena National Forest may shift some traffic to the analysis area. The analysis area is easily accessible by the cities of Great Falls, Helena and Missoula. Cumulatively, an increase in use may eventually trigger a need to re-evaluate maintenance levels on some roads due to increased motorized use resulting from the increase in population in the surrounding areas. Conversely, future vegetation projects identified in appendix D would likely address needed maintenance in association with the respective projects. It is assumed that all future projects would comply with decisions made as part of this travel planning effort. Any new construction would be in compliance with current design standards. All necessary maintenance activities before, during and after the projects would be provided for in any resulting contracts developed in association with these projects.

Summary of Effects

The number of miles of roads as well as road conditions would remain unchanged in alternative 1. Maintenance would continue routinely on high use roads with sporadic maintenance taking place on other roads. Additional maintenance opportunities would continue to be identified through the development of other projects in the analysis area, and through partnership activities. Failure to provide access to the entire forest by the general public would continue in cases where forest roads are located behind private roads without right of ways or easements. No MVUM would be produced. Unclassified routes would remain in their current condition. This would potentially increase maintenance needs because roads that would be designated as open but were not originally designed using the National BMP standards (2012) would require some degree of maintenance to address environmental concerns and bring them up to current design standards. Enforcement would continue to be complicated with a number of miles of short, dead-end roads staying open, and therefore requiring attention as part of the patrolled area. This alternative meets the purpose and need from the perspective that it continues to provide a manageable transportation system and access to the national forest. It does, however; leave a number of miles of road template on the ground not considered necessary for the management of the national forest.

Off-route vehicle travel would continue to occur within 300 feet of the edge of the road to access temporary, dispersed camping areas. The potential for resource impacts of this would be greater than that of any of the action alternatives because there are a greater number of roads that would continue to be open for public use.

Alternative 2

Project Design Features

There is no specific project design feature tied to the roads resource. For a full list of project design features see chapter 2, page 42.

Direct and Indirect Effects

Transportation System

Alternative 2 includes closing roads and trails that are currently open to motorized use, as well as opening other roads and trails for motorized use that are currently closed. It also includes some limited new construction of roads and trails. There would be approximately 352 miles of National Forest System roads in the planning area road open to public motorized use. No areas would be designated for off-route wheeled motorized vehicle use, except for camping and parking associated with camping within 300 feet of a designated system route, and parking safely on the side of the road within 30 feet of the edge of the road surface as described in chapter 2.

Roads that receive infrequent use, or are closed or stored would slowly reclaim naturally. Closure of roads could potentially shift additional use to the remaining open roads increasing maintenance needs on those roads.

Table 11 and table 12 display the notable changes to the transportation system under alternative 2 by HUC 5watershed.

Table 11. Miles of road changing from open yearlong to closed or stored by HUC 5 watershed

HUC 5 Watershed	Miles Changing from Open Yearlong to Closed or Stored or Converted to an Alternative Use
Blackfoot River Headwaters	22 miles
Upper Little Prickly Pear Creek	10 miles
Landers Fork	<1 mile
Nevada Creek	11 miles
Blackfoot River Keep Cool	9 miles

The majority of roads identified for closure or storage are less than 1 mile long and have been determined not necessary for the management of the national forest. The roads displayed in table 12 are over 1 mile long and are proposed for storage.

Table 12. Alternative 2 - Roads greater than 1 mile in length proposed for storage that are currently open to motorized vehicles

HUC 5 Watershed	Road #	Name	Reason
Blackfoot River Headwater	4084	Surveyor's Gulch	No Public Access
	Various unclassified routes	Plum Creek Land	Not Needed
	4090	Sand Bar Creek	Not Needed
Blackfoot River Keep Cool	601-K2	No Name	Not Needed
	1826-J1	Lincoln J1	Not Needed
	4043-D1	No Name	Not Needed
	U-066	Plum Creek Undecided	Not Needed
	1826-B1	Humbug Spur	Not Needed
	1838-C1	Long Ethel	Not Needed
	1886	Avis Gulch	Not Needed
	4043	Lincoln Ditch (segment)	Not Needed
	607-A1	Beaver Triangle	Not Needed
	607-F2	Stonewall Creek Spur	Not Needed
Nevada Creek	1163-G1	Chimney Creek	Not Needed
	296-A2	Huckleberry Creek	Resource Protection
	4047	Shingle Mill	No Public Access
	4047-A1	Mitchell Creek Conn.	No Public Access
	1830-A1	Deer Creek Spur	Not Needed
	1833-B1	Clear Creek Spur	Not Needed
	8963	Chicken Cr	Not Needed
	4047	Shingle Mill	Not Needed
Upper Little Prickly Pear	1819	Wilburn	Resource Protection
	1827-G1	Upper Trout Creek #1	Not Needed
	1827-C1	Page Gulch Loop	Not Needed
	1827-H1	Upper Trout Creek #2	Not Needed

In alternative 2, the roads in table 13 would change from being open yearlong for legal highway vehicles to being part of the motorized trail system. The majority are less than 1 mile in length.

Table 13. Roads designated as open to legal, highway, motorized vehicles proposed to become part of the motorized trail system

HUC 5 Watershed	Road	Name	Miles
Blackfoot River Headwaters	4082	Pay Master	3
	4082-H1	Rogers Pass H1	2
	4082-H2	Rogers Pass H2	<1
	4082-I1	Rogers Pass I1	<1
	4082-I2	Rogers Pass I2	<1
	4086	Mike Horse Mine	<1
	4086-B1	Mike Horse B1	<1
	4086-B3	No Name	<1
	4086-B4	Rogers Pass B4	<1
	4086-B5	No Name	<1
	4090-C1	Rogers Pass C1	<1
Blackfoot River-Keep Cool Creek	1879	Mead-Prickly Gulch	2

Table 14 displays proposed new road and motorized trail construction. Under alternative 2, approximately 0.2 miles of new road would be constructed and approximately 2 miles of motorized trail would be constructed.

Table 14. Unclassified routes, less than 1 mile in length, proposed for road or motorized trail construction

HUC 5 Watershed	Route Number	Proposed Use
Blackfoot River Headwaters	U-427	Motorized Trail
Blackfoot River Headwaters	U-NEW-005	Road
Upper Little Prickly Pear Creek	U-NEW-1006	Motorized Trail
Blackfoot River Headwaters	U-NEW2	Motorized Trail
Blackfoot River Headwaters	U-NEW3	Motorized Trail
Blackfoot River-Keep Cool Creek	U-NEW4	Motorized Trail
Blackfoot River-Keep Cool Creek	U-NEW-4043	Motorized Trail
Blackfoot River-Keep Cool Creek	U-NEW-4043	Motorized Trail

Closures

Alternative 2 proposes to store or decommission 143 miles of routes; substantially less than those proposed for alternatives 3 or 4. Many of these roads are unclassified routes or roads acquired during a land acquisition.

Unclassified Routes

Of the approximately 60 miles of unclassified routes in the planning area, approximately 39 miles (or 65 percent) would be identified for closure, storage or decommissioning. Refer to table C-1 in appendix C for road details by alternative, and the alternative 2 map in appendix G that shows unclassified routes that would be incorporated into the Forest Transportation System. Many of the unclassified roads or roads acquired through land acquisition are identified for storage rather than decommissioning to keep options open for long-term resource management. It is anticipated that creation of unclassified new routes would likely occur at a low rate. Any new, unclassified routes would be considered closed and treated accordingly, as described in chapter 2.

Quality motorized trail system

The motorized trail system would increase under alternative 2 from 56 miles to approximately 92 miles of designated motorized trail.

CDNST

Alternative 2 proposes to manage the CDNST as it is currently being managed; there would continue to be a mix of motorized and non-motorized use.

Motor Vehicle Use Map and Enforcement Complexity

Alternative 2 would result in a motor vehicle use map that would clearly delineate designated roads and motorized trails open for wheeled motorized use. Under alternative 3, the complexity of the map would be slightly reduced; instead of 12 different closure categories and seasonal restrictions, there would be 9 different closure categories showing on the MVUM, including various seasonal closures.

Cumulative Effects

The list of past, present and reasonably foreseeable future actions listed and described in appendix D was reviewed to determine if implementing alternative 2, combined with the implementation of these other actions, would result in measureable cumulative impacts to the transportation system in the planning area. Those most relevant that were considered include other travel plans across the forest, American Recovery and Reinvestment Act (ARRA) of 2009 projects, rerouting South Poorman Creek, campground maintenance, the Blackfoot Winter Travel Plan, and vegetation management actions. Combining the implementation of alternative 2 with these other actions would result in beneficial cumulative effects to the planning area because they would all generally be designed to improve conditions.

Road maintenance associated with vegetation management projects would be the responsibility of the contractor. Any new construction or maintenance activities would be temporary and performed in compliance with best management practices and all temporary roads would be decommissioned upon completion of the projects.

This travel plan would not change access for winter use; this is addressed in the Blackfoot North Divide winter travel plan decision.

Summary of Effects

This alternative meets the purpose and need by providing a manageable system of designated public motorized access routes and by providing detailed analysis of every road on the system to determine effective management of that road. This alternative completes the site specific travel plan requirements identified in the 2001 Tri-State OHV Decision. Many of the unclassified acquired roads are identified for storage rather than decommissioning to keep options open for long-term resource management. Effects on the ground would be continued maintenance on the existing high use roads, capitalizing on opportunities for road improvements when presented as part of other projects. Decommissioning and storage activities would be implemented as part of an over-all comprehensive plan. A simplified motor vehicle use map would be produced as a result of implementation of this alternative and would clearly identify roads and trails and their designated motorized uses for forest visitors. See the alternative 2 map in appendix G for proposed changes in route designations under alternative 2. All roads that fail to provide for public access due to jurisdictional concerns would be put into storage.

Alternative 3

Direct and Indirect Effects

Transportation System:

Alternative 3 includes closing roads and trails that are currently open to motorized use as well as opening other roads and trails for motorized use that are currently closed. It also includes some limited new construction of roads and trails. There would be approximately 302 miles of National Forest System roads in the planning area road open to public motorized use. There is an over-all reduction of 144 miles from the current condition and approximately 50 more miles than what is proposed for alternative 2. As in alternative 2, no areas would be designated for off-route wheeled motorized vehicle use, except for camping or parking associated with camping within 300 feet of a designated system route as described in chapter 2. Under alternative 3 parking safely next to the side of a road within 30 feet from the edge of the road would also be allowed.

Roads that receive infrequent use, or are closed or stored would slowly reclaim naturally. Closure of roads could potentially shift additional use to the remaining open roads increasing maintenance needs on those roads. The few unclassified routes that are adopted into the system may not meet current design standards and could possibly contribute to resource damage over time.

The majority of roads proposed for closure under alternative 3 are roads that are less than 1 mile long and determined to be unnecessary for the management of the forest. Table 15 and table 16 display currently open roads over 1 mile that are either proposed for closure or changed to motorized trail.

Table 15. Alternative 3-Roads greater than 1 mile in length proposed for closure that are currently open to motor vehicles

HUC 5 Name	Route ID	Route Name	Reason
Nevada Creek	1163-G1	Chimney Creek	Watershed/Security-Overgrown Road
Upper Little Prickly Pear Creek	1819	Wilburn	Resource Protection
Blackfoot River-Keep Cool Creek	1825-B1	South Fork Ridge	Not Needed to Provide Access
Landers Fork	1832	Snowbank Creek	Resource Protection
Nevada Creek	296-A2	Huckleberry Creek	Resource Protection
Nevada Creek	4047	Shingle Mill	No Public Access
Nevada Creek	4047-A1	Mitchell Creek Conn.	No Public Access
Blackfoot River Headwaters	4084	Surveyor's Gulch	No Public Access
Blackfoot River-Keep Cool Creek	4133	Granite Butte	Resource Protection
Blackfoot River-Keep Cool Creek	601-K2	No Name	Not Needed to Provide Access

Table 16. Alternative 3-Roads currently open and over 1 mile long proposed to be converted to motorized trails

HUC 5 Name	Route ID	Route Name	Miles
Blackfoot River Headwaters	4082	Pay Master	2.0
Blackfoot River Headwaters	4082-H1	Rogers Pass H1	2.0
Blackfoot River Headwaters	4086	Mike Horse Mine	2.0
Blackfoot River Headwaters	4090	Sandbar Creek	1.0

The following table shows new road and motorized trail construction proposed under alternative 3. Alternative 3 proposed approximately 0.2 miles of new road construction and approximately 3 miles of new motorized trail construction.

Table 17. Alternative 3-Proposed new road and motorized trail construction, each individual segment is equal to or less than 1 mile long

HUC5 Name	ID	Road or Trail
Blackfoot River Headwaters	U-427	Motorized Trail
Blackfoot River-Keep Cool Creek	U-NEW_4043	Motorized Trail
Blackfoot River Headwaters	U-NEW-4090	Motorized Trail
Blackfoot River Headwaters	U-NEW-005	Motorized Trail
Blackfoot River Headwaters	1841-D1-NEW2	Motorized Trail
Blackfoot River-Keep Cool Creek	1821-B1-NEW	Motorized Trail
Blackfoot River-Keep Cool Creek	U-NEW4	Motorized Trail
Blackfoot River Headwaters	U-NEW-4090-C	Motorized Trail

Closures

Alternative 3 proposes to store or decommission 276 miles of routes. This level of proposed closure would be greater than that proposed for alternative 2 but less than that proposed for alternative 4. These changes can be accounted for in a variety of ways:

- Unclassified roads determined necessary for resource management and thus included as part of the National Forest System
- Roads changed from open or a seasonal closure to a different type of closure
- Routes converted to motorized trails or non-motorized trails

Specific road-by-road treatment proposals are shown in appendix C.

Unclassified Roads

Of the approximately 60 miles of unclassified routes in the planning area, approximately 54 miles (or 90 percent) would be identified for closure, storage or decommissioning. The remaining miles would become part of transportation system. Refer to appendix C for road details by alternative, and the alternative 3 map in appendix G that shows unclassified routes that would be incorporated into the Forest Transportation System. Many of the unclassified roads are acquired roads are identified for storage rather than decommissioning to keep options open for long-term resource management. It is anticipated that creation of new unclassified routes would likely occur at a low rate. Any new, unclassified routes would be considered closed and treated accordingly, as described in chapter 2.

Motor Vehicle Use Map and Enforcement Complexity

Alternative 3 would result in a motor vehicle use map that would clearly delineate designated roads and motorized trails open for wheeled motorized use. Under alternative 3, the complexity of the map would be reduced and simplified; instead of 12 different closure categories and seasonal restrictions shown on the existing Forest Visitor Map, there would be 5 different closure categories shown on the supplemental MVUM that would clearly show locations for legal motor vehicle use, including various seasonal closures.

Quality Motorized Trail System

The existing designated motorized trail system would decrease under alternative 3 from 56 miles to 47 miles.

CDNST

Alternative 3 proposes to manage the CDNST primarily for non-motorized use; seasonal motorized use would be limited to approximately 1 mile of trail and the rest of the trail would be managed for non-motorized use.

Cumulative Effects

The list of past, present and future actions listed and described in appendix D was reviewed to determine if implementing alternative 3, combined with the implementation of these other actions, would result in measureable cumulative impacts to the transportation system in the planning area. Those most relevant that were considered include other travel plans across the forest, ARRA projects, rerouting south Poorman Creek, campground maintenance, the Blackfoot Winter Travel Plan, and vegetation management actions. Combining the implementation of alternative 3 with these other actions would result in beneficial cumulative effects to the planning area because they would all generally be designed to improve conditions. This is described in more detail under alternative 2.

Summary of Effects

This alternative meets the purpose and need by providing a manageable system of designated public motorized access routes and by providing detailed analysis of every road on the system to determine effective management of that road. This alternative completes the site-specific travel plan requirements identified in the 2001 Tri-State OHV Decision. Many of the unclassified acquired roads identified for storage rather than decommissioning to keep options open for long-term resource management. Effects on the ground would be continued maintenance on the existing high use roads, identifying opportunities for road improvements when presented in the development of other projects. Decommissioning and storage activities would be implemented as part of an overall comprehensive plan. A supplemental motor vehicle use map (to be used in conjunction with the Forest Visitor Map) would be produced as a result of implementation of this alternative and would clearly identify roads and trails and their designated motorized uses for forest visitors.

See the alternative 3 map in appendix G for proposed changes in route designations under alternative 3. All roads that fail to provide for public access due to jurisdictional concerns would be put into storage. The majority of the motorized use on roads 1840-A1 and 1840-B1 along the CDNST would change to non-motorized use.

Alternative 4

Direct and Indirect Effects

Transportation System

Alternative 4 includes closing roads and trails that are currently open to motorized use as well as opening other roads and trails for motorized use that are currently closed. It also includes some limited new construction of roads and trails. There would be approximately 289 miles of National Forest System roads in the planning area open to public motorized use. This is an overall reduction of 157 miles from the current condition, and is approximately 63 more miles than what is proposed for alternative 2. Like alternatives 2 and 3, alternative 4 would be consistent with travel planning regulations and a new MVUM would be produced. No areas would be designated for off-route wheeled motorized vehicle use, except for dispersed camping within 300 feet of a designated system route, as described in detail in chapter 2.

Roads that receive infrequent use, or are closed or stored would slowly reclaim naturally. Closure of roads could potentially shift additional use to the remaining open roads increasing maintenance needs on those roads. The few unclassified routes that are adopted into the system may not meet current design standards and could possibly contribute to resource damage over time.

Alternative 4 would be effective in reducing potential damage identified with off-route travel. Fewer open routes would result in less off-route travel under this alternative. Acquired routes would be identified as necessary to the route system, stored, or closed and decommissioned.

Several road segments proposed for closure or storage under alternative 4 are greater than 1 mile long and have been determined to be unnecessary for the management of the forest under alternative 4. Table 18 displays roads over 1 mile in length that are currently open but proposed for closure or storage. Table 19 displays routes greater than 1 mile in length that are currently open but proposed for conversion to motorized trails.

Table 18. Currently open routes greater than 1 mile long proposed for closure or storage in alternative 4

Watershed	Route Number	Route Name	Length (miles)
Blackfoot River Headwaters	4084	Surveyor's Gulch	2.0
Blackfoot River Headwaters	U-001	Plum Creek Land Ex	2.0
Blackfoot River Headwaters	U-010	Plum Creek Land Ex	1.0
Blackfoot River-Keep Cool Creek	1843	West McCarthy #1	1.0
Blackfoot River-Keep Cool Creek	1879	Mead-Prickly Gulch	1.0
Blackfoot River-Keep Cool Creek	1800-A1	Lower Keep Cool	1.0
Blackfoot River-Keep Cool Creek	1825-B1	South Fork Ridge	2.0
Blackfoot River-Keep Cool Creek	1842-A1	Fields Gulch Spur	1.0
Blackfoot River-Keep Cool Creek	1842-B2	Horse Gulch	2.0
Blackfoot River-Keep Cool Creek	601-K2	No Name	1.0
Landers Fork	1832	Snowbank Creek	1.0
Landers Fork	330-B1	Cotter Creek	4.0
Nevada Creek	4047	Shingle Mill	2.0
Nevada Creek	1163-G1	Chimney Creek	2.0

Watershed	Route Number	Route Name	Length (miles)
Nevada Creek	296-A1	Nevada Face	4.0
Nevada Creek	296-A2	Huckleberry Creek	3.0
Nevada Creek	4047-A1	Mitchell Creek Conn.	2.0
Upper Little Prickly Pear Creek	1819	Wil Burn	4.0
Upper Little Prickly Pear Creek	485-G1	Marsh Creek Spur	1.0

Table 19. Currently open routes greater than 1 mile long proposed for conversion to motorized trails in alternative 4

Watershed	Route Number	Route Name	Length (miles)
Blackfoot River Headwaters	4082-H1	Rogers Pass H1	2.0
Blackfoot River Headwaters	4086	Mike Horse Mine	2.0
Blackfoot River Headwaters	4090	Sandbar Creek	1.0
Blackfoot River Headwaters	4082	Pay Master	2.0

The following table shows new road and motorized trail construction proposed under alternative 4. Alternative 4 proposes approximately 0.2 miles of new road construction and approximately 0.6 miles of new motorized trail construction.

Table 20. Proposed new road and motorized trail construction under alternative 4

HUC5 Name	Route ID	Route Name	Length (miles)
Blackfoot River Headwaters	U-427	Plum Creek Land Ex	0.611
Blackfoot River-Keep Cool Creek	U-NEW-4043	Lone Point	0.960
Blackfoot River Headwaters	U-NEW-4090		0.388
Blackfoot River Headwaters	1841-D1-NEW2	Hogum Creek Spur D1	1.040
Blackfoot River Headwaters	U-NEW-005	Plum Creek Land Ex	0.178
Blackfoot River-Keep Cool Creek	1821-B1-NEW	Sucker-Keep Cool	0.153
Blackfoot River-Keep Cool Creek	U-NEW4	Lone Point	0.829
Blackfoot River Headwaters	U-NEW6	Glens Gulch	0.572
Blackfoot River Headwaters	U-NEW-4090-C	Sandbar	0.089
Blackfoot River Headwaters	U-NEW-4090		0.001

Closures

Alternative 4 proposes to store or decommission 294 miles of routes, and this level of proposed closure would be greater than that proposed for alternatives 2 or 3. Other routes are proposed for closure and these can be accounted for in the same way as described for in alternative 3.

Although, there is a reduction in open miles this alternative does not eliminate any routes that are currently providing access to the most popular part of the forest. It provides for a closer look at routes that were acquired as part of the land sales process and either puts those routes on the existing system or closes the system.

Alternative 4 would likely take the most time to fully implement compared to the other action alternatives because of the time and costs associated with decommissioning roads as opposed to closing roads or putting them in storage.

Specific road by road treatments are shown in appendix C.

Unclassified Routes

Of the approximately 60 miles of unclassified routes in the planning area, approximately 53 miles (or 90 percent) would be identified for closure, storage or decommissioning. The remaining miles would become part of the Forest Transportation System. Refer to appendix C for road details by alternative, and the alternative 4 map in Appendix G that shows unclassified routes that would be incorporated into the Forest Transportation System. Many of the unclassified roads or roads acquired through the land acquisition process are identified for storage rather than decommissioning to keep options open for long term resource management. It is anticipated that creation of new unclassified routes would likely occur at a low rate. Any new, unclassified routes would be considered closed and treated accordingly, as described in chapter 2.

Quality Motorized Route System

The existing designated motorized trail system would increase under alternative 4 from 56 miles to 63 miles.

CDNST

Alternative 4 proposes to manage the CDNST primarily for non-motorized use; approximately 3 miles of non-motorized trail would be reconstructed and approximately 1 mile of trail would be managed for seasonal motorized use.

Motor Vehicle Use Map (MVUM) and Enforcement Complexity

Alternative 4 would result in an MVUM that would clearly delineate designated roads and motorized trails open for wheeled motorized use. It removes the ambiguity, real or perceived, regarding the operational status of all routes on the forest, whether part of the existing system, or unclassified, or an acquired road. Under alternative 4, the complexity of the MVUM would be somewhat reduced and simplified; instead of 12 different closure categories and seasonal restrictions, there would be 10 different closure categories showing on the MVUM, including various seasonal closures (five of these would be for trail use compared to two in alternative 3).

Cumulative Effects

The list of past, present and future actions described in appendix D was reviewed to determine if implementing alternative 4 combined with the implementation of these other actions would result in measureable cumulative impacts to the transportation system in the planning area. Those most relevant that were considered, include other travel plans across the forest, ARRA projects, re-route of South Poorman Creek, campground maintenance, the Blackfoot Winter Travel Plan, and vegetation management actions. Combining the implementation of alternative 4 with these other actions would result in beneficial cumulative effects to the planning area because they would all generally be designed to improve conditions. This is described in more detail under alternative 2.

Summary of Effects

This alternative meets the purpose and need by providing a manageable system of designated public motorized access routes and by providing detailed analysis of every road on the system to determine effective management of that road. This alternative completes the site specific travel plan requirements identified in the 2001 Tri-State OHV Decision. Many of the unclassified roads or acquired roads are identified for storage to keep options open for long term resource management. Effects on the ground would be continued maintenance on the existing high use roads, capitalizing on opportunities for road improvements when presented as part of other projects. Decommissioning and storage activities would be implemented as part of an over-all comprehensive plan. A simplified motor vehicle use map would be produced as a result of implementation of this alternative and would clearly identify roads and trails and their designated motorized uses for forest visitors. In alternative 4, many of the unclassified roads or roads acquired through the land acquisition process are identified for storage as opposed to being decommissioned. See the alternative 4 map in appendix G for proposed changes in route designations under alternative 3. All roads that fail to provide for public access due to jurisdictional concerns would be put into storage. The majority of the motorized use on roads 1840-A1 and 1840-B1 along the CDNST would change to non-motorized use.

Conclusion

A thorough review of the road system was completed as part of this analysis. All action alternatives would result in a manageable road system and the creation of an MVUM to supplement the Forest Visitor Map. Overall management and maintenance of the road system would continue in all alternatives. Higher use roads would receive the majority of maintenance money and individual roads would receive maintenance as necessary to provide resource protection. Alternatives 2, 3 and 4 provide for improved forest management by closing or eliminating short road segments that have been determined not necessary for forest management as well as providing for the production of a clear and easy to use MVUM.

All action alternatives meet to varying degrees the purpose and need identified as part of this travel planning process and are summarized in table 8 in chapter 2.

Compliance with Forest Plan and Other Relevant Laws, Regulations, Policies and Plans

All action alternatives would be consistent with the Forest Plan, or a Forest Plan amendment is proposed (big game security see appendix F, and R1 and N1 management areas see appendix I) to ensure consistency.

All action alternatives meet Forest road standards, Forest road management standards and Forest road maintenance standards.

Table 21 provides a summary of the effects by resource indicator.

For more details on compliance with the Forest Plan, see appendix A and for more details on compliance with other regulations and policy, see the Transportation Report (Hergett 2014) in the project record.

Table 21. Summary comparison of environmental effects to engineering resources

Resource Element	Indicator/Measure	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Quality motorized system	Miles of roads available for public use	446 miles of roads available for public use Includes routes acquired as part of land acquisition and unclassified routes not necessary for forest management Closed routes would over time naturally reclaim.	352 miles of roads available for public use (94 mile reduction) All routes acquired through land acquisition and unclassified routes would be included in the route system, closed or removed. 19 miles of routes would be allowed to naturally reclaim 8 miles would be decommissioned 135 miles would be put in storage	302 miles of roads available for public use (114 mile reduction) All routes acquired through land acquisition and unclassified routes would be included in the route system, closed or removed No routes would be allowed to naturally reclaim 200 miles would be decommissioned. 76 miles routes would be put in storage This alternative is an improvement over alternative 2 in terms of miles of road left on the landscape but does not go as far as alternative 4.	289 miles of roads available for public use (157 mile reduction) All routes acquired through land exchange and unclassified routes would be included in the route system, closed or removed from the system. No routes would be allowed to naturally reclaim 212 miles would be decommissioned 82 miles of routes would be put in storage This alternative results in the smallest road system of the alternatives. From the transportation perspective, care of this road system would be the least costly to operate.
Quality motorized system	Miles of roads available for consideration for motorized mixed-use	446 miles: The number of miles possibly available for motorized mixed-use reflects those roads open to the public and the closures are the same. As the miles open for public use in each alternative	352 miles: The number of miles possibly available for motorized mixed-use reflects those roads open to the public and the closures are the same. As the miles open for public use in each alternative changes	302 miles: The number of miles possibly available for motorized mixed-use reflects those roads open to the public and the closures are the same. As the miles open for public use in each alternative changes	289 miles: The number of miles possibly available for motorized mixed-use reflects those roads open to the public and the closures are the same. As the miles open for public use in each alternative changes

Resource Element	Indicator/Measure	Alternative 1	Alternative 2	Alternative 3	Alternative 4
		changes			
Quality Motorized System	Ease of use of the MVUM	No MVUM would be created as part of this alternative. The existing level of complexity of the Forest Visitor Map (with 12 ATM codes) would remain unchanged	An MVUM showing 9 ATM codes would be created to supplement the Forest Visitor Map and would simplify overall ease of use	An MVUM showing 5 ATM codes would be created to supplement the Forest Visitor Map and would simplify overall ease of use	An MVUM showing 10 ATM codes would be created to supplement the Forest Visitor Map and would simplify overall ease of use.

Hydrology

Affected Environment

Analysis Area

As discussed in appendix C and D and in the Transportation System section of this chapter, the planning area has been broken down in 5th-code watersheds or hydrologic unit codes (HUCs) to evaluate effects within the same watershed, and to facilitate understanding on the project components by showing these watershed boundaries. For the hydrologic analysis, we sub-divided the planning area even further into smaller 6th hydrologic unit code watersheds (6^{th} HUC) (table 22). This includes primarily subwatersheds within the Blackfoot River subbasin. The planning area includes portions of 38 6^{th} -HUC watersheds in mainly the Blackfoot River Headwaters, but also portions of the Missouri River Headwaters.

The Blackfoot travel planning area includes Nevada, Middle Blackfoot, and Blackfoot Headwaters total maximum daily load (TMDL) planning areas as well as smaller portions of the Little Blackfoot, Dearborn, and Holter TMDL planning areas. Several streams within the Blackfoot travel planning area are listed by the Montana Department of Environmental Quality (DEQ) as having impaired water quality. Most of these streams are not fully meeting beneficial uses due to sedimentation, among other impairments (table 23). Additionally, some non-listed stream reaches within the planning area flow directly into listed impaired reaches. The majority of the streams contained within the Blackfoot travel planning area are within the Blackfoot Headwaters TMDL (Montana DEQ 2008), which recommended a 30 percent reduction in sedimentation from forest roads. The Little Blackfoot, Dearborn, and Holter TMDL planning areas do not contain any listed streams within the planning area.

Water Quality

Forest roads, by virtue of their existence on the landscape, can have a harmful effect on watershed values. The impact of a road is generally continuous whether the road is open or closed to public use, although, over time, unused roads are often partially stabilized by vegetation, thereby decreasing the negative impacts to the watershed. The alternatives identify the open-closed status of NFS roads as well as which roads would be decommissioned. This decision would potentially result in substantial changes in the impact of roads on streams and riparian areas within planning area watersheds.

The primary water quality concern related to the network of routes in the Blackfoot travel Planning area is the transport of sediment from forest roads to streams. Other documented impairments in these watersheds include various metals related mainly to past mining activities, low pH, flow alteration, and alteration of riparian vegetation. This analysis focuses on sediment, as this impairment stems in large part, from forest roads in the planning area. Furthermore, this water quality issue has the greatest potential to be affected by the travel planning decision as resulting road decommissioning is completed.

Sediment from Roads

Unpaved roads are the predominant source of sediment in most forested drainages, including the 6^{th} -HUC watersheds in the Blackfoot travel planning area. Specifically, unpaved roads (especially native-surface roads) that cross or run parallel to streams generally deliver sediment to streams during rain and snowmelt events because they are hydrologically connected to the stream (e.g., road segments that, during a runoff event, have a continuous surface-flow path between any part of the road prism and a natural stream channel). In contrast, roads without a hydrologic connection to a stream channel may lose eroded sediment from the road surface, but do not deliver sediment to stream channels and are thus generally not a water quality concern. Road and culvert maintenance and gravel surfacing can reduce the number or magnitude of sediment delivery points on a road for a period of years, but a road hydrologically connected to a stream would remain an episodic source of sediment as long as it remains. Additionally, a road that is a sediment source generally remains so regardless of level of use. Although vegetation can eventually become re-established on roads that are unused or minimally used, this process typically occurs over many years, during which erosion and sediment delivery continue to occur. Thus, seasonal closures of roads were not considered to be a project-related positive or negative impact to the hydrologic resource, but rather a continuation of the existing condition.

Thus, the most important indirect indicators of the potential for road sedimentation in streams are the number of road-stream crossings and the length of road near a stream. Naturally, the number of observed sediment delivery points increases with the length of road near a stream and the number of stream crossings (table 24). The Helena National Forest Roads Analysis Process (2004) evaluated the road network on the Forest. The parameters used in determining the potential impact of roads on water quality in the process are essentially the same as presented in table 24, and are thus not presented in this analysis. For additional information about roads analysis process in the Blackfoot travel planning area, see the fisheries section or the fisheries report in the project record.

Table 22. 6th -HUC watersheds within the Blackfoot travel planning area

6th- HUC ID	6th -HUC Name	Area Total (Acres)	Area HNF (Acres)	Percent Basin on HNF	TMDL Planning Area
170102030309	Arrastra Creek	15,084	8,983	60	Blackfoot Headwaters
170102030303	Beaver Creek	11,617	8,856	76	Blackfoot Headwaters
170102030202	Blackfoot River-Anaconda Creek	17,154	16,318	95	Blackfoot Headwaters
170102030206	Blackfoot River-Hardscrabble Creek	12,474	3,362	27	Blackfoot Headwaters
170102030308	Blackfoot River-Lincoln	11,399	5,332	47	Blackfoot Headwaters
170102030310	Blackfoot River-Little Moose Creek	20,036	8,981	45	Blackfoot Headwaters
170102030201	Blackfoot River-Willow Creek	12,409	8,810	71	Blackfoot Headwaters
170102030103	Copper Creek	26005	20389	78	Blackfoot Headwaters
170102030205	Hogum Creek	7630	7595	100	Blackfoot Headwaters
170102030301	Humbug Creek	15451	3421	22	Blackfoot Headwaters
170102030304	Keep Cool Creek	22834	13618	60	Blackfoot Headwaters
170102030305	Lincoln Creek	7552	5777	77	Blackfoot Headwaters
170102030204	Lower Alice Creek	11697	7476	64	Blackfoot Headwaters
170102030104	Lower Landers Fork	15662	5452	35	Blackfoot Headwaters
170102030102	Middle Landers	23776	4954	21	Blackfoot Headwaters

6th- HUC ID	6th -HUC Name	Area Total (Acres)	Area HNF (Acres)	Percent Basin on HNF	TMDL Planning Area
	Fork				
170102030302	Poorman Creek	25783	24947	97	Blackfoot Headwaters
170102030307	Sauerkraut Creek	8524	4945	58	Blackfoot Headwaters
170102030203	Upper Alice Creek	12561	11588	92	Blackfoot Headwaters
170102030306	Willow Creek	12098	5877	49	Blackfoot Headwaters
100301020201	Green Creek	9901	3452	35	Dearborn
100301020203	Middle Fork Dearborn River	24189	1470	6	Dearborn
100301020401	Upper South Fork Dearborn River	13116	5292	40	Dearborn
100301011803	Little Prickly Pear Creek-Marsh Creek	17152	3419	20	Holter
100301011807	Lower Canyon Creek	17506	1068	6	Holter
100301011805	Upper Canyon Creek	15169	10806	71	Holter
100301011804	Virginia Creek	19407	14325	74	Holter
170102030704	Ward Creek	8094	2329	29	Middle Blackfoot
170102030703	Rock Creek	25412	4286	17	Middle Blackfoot
170102030405	Buffalo Gulch	9160	5027	55	Nevada Creek
170102030404	Jefferson Creek	6799	2722	40	Nevada Creek
170102030415	Lower Nevada Creek	31370	4817	15	Nevada Creek
170102030407	Middle Nevada Creek	18047	4514	25	Nevada Creek
170102030401	Nevada Creek Headwaters	25255	18184	72	Nevada Creek
170102030403	Washington Creek	8013	5037	63	Nevada Creek

*Two watersheds do not contain any travel management proposed actions under any of the alternatives and therefore and will not be included in any further analysis tables.

Eleven 6th Code HUCs, or approximately 30 percent of the 6th -HUC watersheds covered by the Blackfoot travel planning area, contain a stream that is impaired by sediment, including some of the major streams in this area (table 23).

Table 23. Streams in the Blackfoot travel planning area (or directly downstream) listed as impaired by sediment by the Montana DEQ

HUC 6 ID	HUC 6 Name (see figure 6)	Stream Name
170102030309	Arrastra Creek	Arrastra Creek
170102030310	Blackfoot River-Little Moose Creek	Blackfoot River
170102030201	Blackfoot River-Willow Creek	Sandbar Creek, Willow Creek
170102030301	Humbug Creek	Blackfoot River, Poorman Creek
170102030302	Poorman Creek	Poorman Creek
170102030206	Blackfoot River-Hardscrabble Creek	Willow Creek
170102030704	Ward Creek	Ward Creek
170102030405	Buffalo Gulch	Buffalo Gulch
170102030404	Jefferson Creek	Jefferson Creek
170102030401	Nevada Creek Headwaters	Nevada Creek
170102030403	Washington Creek	Washington Creek

In part, as a result of sediment impairment, all of these impaired stream reaches are not fully meeting the aquatic life and cold water fishery designated beneficial uses (MT DEQ, 2004). The Blackfoot Headwaters TMDL recommends a 30 percent reduction in NFS road sediment delivery, and 100 percent for unclassified roads (MT DEQ 2004). The Middle Blackfoot and Nevada Creek TMDL reports recommend a non-specific reduction in sediment from NFS roads through implementation of Best Management Practices (MT DEQ 2008).

In addition to sediment delivery from roads, the presence of culverts (particularly those that are undersized) at road-stream crossings present a potential risk of sedimentation in any stream. During a flood event, especially following a wildfire, a culvert can become obstructed or overwhelmed by the magnitude of flow. The consequence of culvert failure is often the erosion and entrainment of road-fill around the culvert. There has not been a comprehensive survey and analysis of culverts in the Blackfoot travel planning area, but many are old and likely undersized.

We provided a summary of available NFS road data (table 24) and unclassified road data (table 25) including total road miles by 6th HUC drainage, road miles within the 150-foot buffer from streams, number of stream crossings, and surveyed road sediment points. The sediment delivery point information presented in table 24 is a summary of the road sediment surveys completed by Helena National Forest hydrology personnel. It is not a complete dataset for every road in the travel plan, additionally hydrology personnel were not able to survey every stream crossing in the travel plan, therefore not all stream crossings are listed as sediment sources.

Table 24. Road information for portions of 6th -HUC subwatersheds within the Blackfoot travel planning area

6th -HUC	6th -HUC Watershed Name	Roads*** (miles)	Roads within 150' buffer from stream (miles)	Stream Crossings (#)	Sediment delivery points (#)*
170102030309	Arrastra Creek	28.5	2.0	17	14
170102030303	Beaver Creek	24.0	4.5	26	20

6th -HUC	6th -HUC Watershed Name	Roads*** (miles)	Roads within 150' buffer from stream (miles)	Stream Crossings (#)	Sediment delivery points (#)*
170102030202	Blackfoot River-Anaconda Creek	90.5	26.1	85	43
170102030206	Blackfoot River-Hardscrabble Creek	11.6	1.1	0	0**
170102030308	Blackfoot River-Lincoln	17.4	0.8	6	5
170102030310	Blackfoot River-Little Moose Creek	54.3	7.1	30	6
170102030201	Blackfoot River-Willow Creek	21.3	5.5	22	7
170102030405	Buffalo Gulch	66.6	11.6	11	20
170102030103	Copper Creek	86.8	10.3	49	52
170102030205	Hogum Creek	25.2	4.6	29	14
170102030301	Humbug Creek	47.3	2.2	2	23
170102030404	Jefferson Creek	13.1	3.5	8	32
170102030304	Keep Cool Creek	26.5	5.9	27	25
170102030305	Lincoln Creek	30.9	3.3	13	11
100301011803	Little Prickly Pear Creek-Marsh Creek	13.8	4.0	3	9
170102030204	Lower Alice Creek	62.2	6.2	28	5
100301011807	Lower Canyon Creek	0.0	0.2	0	0†
170102030104	Lower Landers Fork	6.9	2.5	0	0**
170102030415	Lower Nevada Creek	20.9	2.7	18	9
100301011903	Lyong Creek	0.0	0.0	0	0**
100301020203	Middle Fork Dearborn River	11.7	2.7	3	0**
170102030407	Middle Nevada Creek	18.7	3.1	11	5
170102030401	Nevada Creek Headwaters	28.6	2.8	8	8
170102030302	Poorman Creek	68.1	18.0	76	63
170102030703	Rock Creek	24.2	0.5	1	2
170102030307	Sauerkraut Creek	10.6	2.4	10	12
170102030203	Upper Alice Creek	12.2	2.8	17	11
100301011805	Upper Canyon Creek	46.9	16.4	20	0†
100301020401	Upper South Fork Dearborn River	3.8	3.0	6	0†
100301011804	Virginia Creek	71.2	14.9	41	38
170102030704	Ward Creek	3.7	4.5	0	0**
170102030403	Washington Creek	15.5	2.4	5	0†
170102030306	Willow Creek	23.6	2.8	13	25
100301011905	Wolf Creek	0.2	0.1	0	0**
Total		**987**	**181**	**585**	**459**

* Surveyed by HNF hydrology personnel during the 2009 and 2010 field season. Not every stream crossing was surveyed.

** There is low potential in these watersheds for road sediment to get to streams.

***Does not include non-motorized trails or unclassified roads, those are included in table 24. † Roads in watershed not surveyed recently

Gray shading indicates 6th -HUC watersheds that contain streams listed as impaired by sediment by the Montana DEQ.

Table 25. Unclassified road information for 6th HUC subwatersheds within the Blackfoot planning area

6th -HUC	6th -HUC Watershed Name	Unclassified Roads (miles)	Unclassified Roads within 150 feet of Streams (miles)	Stream Crossings (#)
170102030309	Arrastra Creek	**1.1**	**0.1**	**1**
170102030303	Beaver Creek	2.3	0.3	3
170102030202	Blackfoot River-Anaconda Creek	6.7	0.3	0
170102030206	Blackfoot River-Hardscrabble Creek	**1.6**	**0.0**	**0**
170102030308	Blackfoot River-Lincoln	6.7	1.5	2
170102030310	Blackfoot River-Little Moose Creek	**0.0**	**0.0**	**0**
170102030201	Blackfoot River-Willow Creek	**5.1**	**1.8**	**5**
170102030405	Buffalo Gulch	**2.0**	**0.0**	**0**
170102030103	Copper Creek	2.7	0.1	1
170102030205	Hogum Creek	0.7	0.6	2
170102030301	Humbug Creek	**2.9**	**2.7**	**12**
170102030404	Jefferson Creek	**0.7**	**0.4**	**2**
170102030304	Keep Cool Creek	4.9	1.2	6
170102030305	Lincoln Creek	1.9	1.0	3
100301011803	Little Prickly Pear Creek-Marsh Creek	0.1	0.1	0
170102030204	Lower Alice Creek	0.0	0.0	0
100301011807	Lower Canyon Creek	0.0	0.2	1
170102030104	Lower Landers Fork	0.4	0.0	0
170102030415	Lower Nevada Creek	0.0	0.0	0
100301011903	Lyong Creek	4.4	0.0	0
100301020203	Middle Fork Dearborn River	0.0	0.0	0
170102030407	Middle Nevada Creek	0.2	0.1	1
170102030401	Nevada Creek Headwaters	**0.0**	**0.0**	**0**
170102030302	Poorman Creek	**4.3**	**2.1**	**7**
170102030703	Rock Creek	1.4	0.0	0
170102030307	Sauerkraut Creek	0.3	0.2	2
170102030203	Upper Alice Creek	0.0	0.0	0
100301011805	Upper Canyon Creek	4.0	2.2	2
100301020401	Upper South Fork Dearborn River	0.0	0.1	1
100301011804	Virginia Creek	4.4	0.6	0
170102030704	Ward Creek	**0.0**	**0.0**	**0**
170102030403	Washington Creek	**0.0**	**0.0**	**0**
170102030306	Willow Creek	1.3	0.2	2
100301011905	Wolf Creek	0.0	0.0	0
Total		**60**	**16**	**53**

Gray shading indicates 6th HUC watersheds that contain streams listed as impaired by sediment: MT DEQ

Sediment from Non-Road Sources

Stream bank erosion occurs in undisturbed drainages as a part of natural channel geomorphic processes, but can be accelerated by management activities, most commonly cattle trampling on grazing allotments. Recommended load reductions in the Nevada Creek TMDL planning area range from 23-34 percent of current sediment loading. Along other streams within the Blackfoot travel planning area, accelerated stream bank erosion due to past mining activities and cattle grazing is likely occurring.

Other sources of sediment in planning area streams include natural watershed erosion, erosion from timber harvest activities on private and federal land, and abandoned mining lands (see cumulative effects list in appendix D). Aside from natural erosion, these sources likely contribute less sediment than erosion from roads, based on estimates made in the Blackfoot Headwaters TMDL and other TMDL reports (Montana DEQ 2004).

Non-Sediment Impairments

A dominant impairment of stream water quality in the study area is elevated metals from past mining activities. For example, following the failure of Mike Horse Tailings Dam on Beartrap Creek in 1975, flow from the reservoir delivered elevated metal loads to the Blackfoot River for approximately 3 weeks. Many of the 6th-HUCs in the Blackfoot travel planning area are not fully meeting designated beneficial uses as a result of metal impairments.

Water Yield

Water yield in most, if not all, of the drainages in the Blackfoot travel planning area has likely increased as a result of widespread tree mortality from insect infestation, in concert with other activities that have removed trees from the watersheds (e.g., green-tree timber harvest) over the past few decades. Baseline conditions are defined to be the expected water yield given a natural extent of forest cover throughout a watershed. In practice, the concept of a static baseline water yield is of limited value, as forest cover in undisturbed watersheds is generally in a state of flux based on several factors, including fire and insect-induced mortality.

Riparian Conditions

The condition of riparian areas within the travel planning area varies widely. Within grazing allotments, riparian areas are generally impacted by cattle grazing and trampling. We evaluated several stream riparian areas using the Proper Functioning Condition (PFC) protocol (Prichard 1998) during the summer of 2009 and 2010. The PFC methodology qualitatively evaluates riparian area vegetation, channel, and floodplain characteristics to arrive at an estimate of how well the riparian area dissipates flow energy and maintains floodplain stability during larger flood events. Past mining, grazing, browsing, and trampling, as well as other land use activities, can adversely impact riparian area form and function. Most of the surveyed riparian areas were not functioning properly or were functioning at risk based on PFC standards. The information gathered in 2009 and 2010 may not be representative of riparian areas throughout the planning area as these surveys were not completed for streams outside of grazing allotments. In the past, however, streams outside of grazing allotments and past mining areas have generally been rated as properly functioning.

There are many non-riparian wetlands in the planning area, however their extent has not been quantitatively described and their condition is largely unknown. Professional observation within allotments has shown that wetlands in some locations see degradation from trampling, etc. Recreational activities (camping and campfires, off highway vehicle use) also may impact non-riparian wetlands. Detrimental effects in these areas are avoided during project implementation and forest management activities by using appropriate best management practices (BMPs) as specified in chapter 2 of the FEIS.

Environmental Consequences

Methodology

Scale of analysis – The scale of analysis for direct and indirect effects is at the individual stream and 6th-HUC watershed scale. The scale of analysis for cumulative effects as described in appendix D is at the 5th-HUC but is also discussed at the smaller 6th-HUC in this section.

GIS data – The accuracy of HNF GIS datasets is described in GIS metadata files in the public record and in Chapter 1 of the EIS. Updated GIS data on stream-road crossings and miles of road within 150 feet of a stream were used in place of RAP data as indicators of problematic roads. Roads within the 150-foot buffer and number of stream crossings were selected as indicators because a road must be hydraulically connected to a stream in order for sediment-laden runoff to flow from the road to the stream. Roads with stream crossings or roads parallel and adjacent to streams are likely to have sediment delivery points. This observation is based on extensive professional experience with road-sediment-source surveys on the Forest. Furthermore, it follows that roads far from a stream are unlikely to be hydrologically connected (Ellis 2008). This surrogate for field data was used in the analysis because field data for all of the routes in the planning area were incomplete. The distance of 150 feet was chosen as the threshold for negative road-stream interaction because this distance generally affords a buffer of sufficient width to minimize sediment delivery from roadsides (Ellis 2008). The width of an adequate sediment buffer is dependent on slope, vegetation, and other site-specific characteristics. In some instances, a 150-foot buffer may not be sufficient to stop concentrated flow of sediment-laden water from a roadside. However, based on experience, a 150-foot buffer is generally more than adequate in the Blackfoot travel planning area watersheds.

Road sediment data – Road sediment surveys were completed by experienced HNF hydrologic technicians and field-validated by the forest hydrologist. Data collected in the road sediment survey were of a degree of precision and accuracy that exceeded the sensitivity of the sediment modeling software.

Road sediment modeling – Road sediment modeling (using WEPP: Road software) was completed by a HNF hydrologist. The accuracy of the model’s predictions is dependent on numerous factors, including the limitations of the model in describing physical conditions of the road and soil, and limitations of PRISM-modified local climate data. The WEPP model output used in this analysis is annual average sediment delivery from the road buffer (tons/acre). This average is based on 30 years of simulated weather events. Actual annual sediment delivery from a road segment would vary greatly from year to year, depending on such factors as antecedent moisture, snow cover, storm intensity, and storm duration. The best use of this dataset is to draw a comparison for potential sediment reductions by alternative. For additional detail on the WEPP: Road model, see Elliot et al. (1999).

Resource Indicators and Measures

Road decommissioning, road storage and restoration of stream crossings have the potential to reduce sediment delivery to streams. This analysis used the following measurement indicators to compare and contrast the alternatives to determine what effects the proposed changes to the transportation system would have on water quality, and the ability to improve watershed conditions in the planning area.

Measurement Indicators:

- Road sediment reduction estimates resulting from road storage or decommissioning in tons per year.
- Miles of road decommissioned in the 150-foot buffer along streams.
- Number of road stream crossings restored on roads designated for decommissioning and storage.
- Number of new route stream crossings.
- Miles of new route construction or reconstruction within the 150-foot buffer along streams.
- Miles of routes and number of stream crossings added to the National Forest System via unclassified routes in the 150-foot buffer along streams.

For the purposes of this analysis, non-motorized trails were only qualitatively considered for effects to watersheds. The primary emphasis of the analysis was on roads and motorized trails. Non-motorized trails, including mountain bike trails, constitute a minor impact to water resources in comparison to motorized routes in the planning area when considering the measurement indicators. For example, the total of miles of non-motorized trail new construction within the 150-ft stream buffer is 0.1 miles or less in the action alternatives, and there is only one proposed new stream crossing in alternative 4 (alternative 2 and 3 propose zero new crossings). Trail construction and maintenance with the inclusion of the BMPs (chapter 2) will help to reduce or eliminate sediment inputs into streams and damage to riparian areas. New trailheads were not emphasized in the analysis because most of the new proposed trailhead locations are well outside of the 150-foot stream buffer. There is one proposed new trailhead location within the stream buffer in the Keep Cool watershed, but implementation of BMPs (chapter 2) in the design and construction of the trailhead will minimize or prevent impacts to the water resource.

Assumptions

- This travel planning effort includes designation of all routes in the planning area as open, closed, seasonally restricted, stored or decommissioned. For the purpose of this analysis, physical closure method was assumed to be at the 3S level for storage and at the 4 level for decommissioning, as defined in table 4.
- The act of closing a road to all but administrative use without action to stabilize the road (e.g., culvert removal, soil decompaction, seeding) may not result in watershed improvement. It is possible for further compromised watershed conditions because maintenance may be reduced and plugged culverts could fail.
- The act of closing a road to all motorized use, removing culverts, decompacting soil and seeding would result in watershed improvement.
- Any road segment that is currently a source of sediment and is designated for decommissioning would (over the long term) no longer be a source of sediment following decommissioning. However, over the short term, there would be a temporary increase in sediment.
- Decommissioning a road with a stream crossing or culvert would include restoring the stream channel to a stable and functional condition.
- Any route designated as 01-STO: closed to motorized use yearlong would be closed to motorized use, but not fully decommissioned. These roads are to be self-maintaining in non-

use status for up to 20 years by recontouring access points, improving drainage, and removing culverts.

- Wheeled, motorized use would be restricted to designated System routes following implementation of alternative 2, 3 or 4. If other unclassified routes are discovered not currently captured in this analysis (and shown on maps in appendix G and included in summary tables in appendix C of this FEIS), they would be considered an unclassified route and therefore closed and legally unavailable to the public without further NEPA analysis. For purposes of this analysis, these unclassified routes would be available for future decommissioning.
- Road maintenance (blading, culvert-clearing) and improvements (surfacing, culvert replacement) may result in temporary increases in sediment delivery to streams, but would result in a long-term (3-5+ year) reduction in sediment delivery from planning area roads.
- In streams without previously identified water-quality impairment, this analysis will assume that beneficial uses are being fully met, and would continue to be met if the proposed travel plan results in no net increase in sediment delivery from roads.
- Implementing alternatives 2, 3 or 4 would not result in measurable changes in water yield in any watershed given the relatively low level of new road and trail construction and the small percentage of the affected watersheds that would be restored.
- Best Management Practices as outlined in the National Best Management Practices for Water Quality Management on National Forest System Lands, Volume 1: National Core BMP Technical Guide (USDA, 2012) and project design features would be implemented to minimize impacts to hydrologic resources and are considered part of the alternatives; these are described in chapter 2.

Also, see the Alternative Development section in chapter 2 for assumptions common to all resources.

Information Used

Helena National Forest GIS data – Datasets used in this analysis include National Hydrologic Dataset (NHD) streams and 6th-HUC watersheds, roads, and planned road designations. Analysis for this section also used number of road-stream crossings and length of roadway within 150 feet of streams. The NHD streams layer includes perennial, intermittent and ephemeral drainages.

Road Sediment-source Survey – Roads in some watersheds within the Blackfoot travel planning area were evaluated in 2009-2012 to determine points where sediment from roads could be transported to streams. Information collected in this survey includes location of sediment transport as well as parameters required to predict sediment delivery using the WEPP: Road model (Elliot et al. 1999). This data set is not all inclusive in the planning area. Stream crossings in the planning area are likely sediment sources, but only those surveyed are included in the WEPP: Roads model.

Roads Analysis Process (RAP) Report – An analysis of the HNF road network was completed in 2004. The analysis designated road risk ratings based on road mileage within riparian habitat conservation areas (RHCA), wet areas, erosive and slide-prone soils, TMDL watersheds, and the number of road-stream crossings (USDA 2004). The RAP assessment of watershed road risks was compared to up-to-date GIS data on stream crossings and roads within 150 feet of streams, and the two were found to be consistent. Thus, the latter datasets were used. For discussion of the RAP data, see the fisheries section of this EIS.

Spatial and Temporal Context for Effects Analysis

The analysis area for the hydrology resource consisted of all 6th-HUC drainages containing roads with potential to be affected in the decision (table 22). This includes primarily subwatersheds within the Blackfoot River subbasin. The Blackfoot travel planning area includes Nevada, Middle Blackfoot, and Blackfoot Headwaters TMDL planning areas as well as smaller portions of the Little Blackfoot, Dearborn, and Holter TMDL planning areas. The temporal scale of the analysis for all effects is greater than 5 years, given that the decision to designate a route as either opened or closed does not necessarily determine whether that would have reduced neutral, or increased impact on water resource in the short term (less than 5 years).

Past, Present, and Foreseeable Activities Relevant to Cumulative Effects Analysis

The list of past, present and reasonably foreseeable future actions considered for the watershed cumulative effects analysis is found in appendix D.

Effects Common to All Alternatives

Routine road maintenance and routine road improvements generally reduce sediment delivery from system routes to streams for a period of years following the work. Failure to maintain open roads and drainage systems can lead to worsening chronic sediment delivery, and potentially catastrophic road failures.

Alternative 1 – No Action

Direct and Indirect Effects

Under alternative 1, no new management actions are proposed. If no new actions are undertaken, no new management-related water resource impacts would occur. Past and ongoing management activities, such as road use, OHV use, off-route camping near streams, creation and use of unclassified routes, mining, and livestock grazing would continue to affect water resources. No new additions to watershed-scale effects would be predicted, because alternative 1 proposed no new management activities.

An irretrievable commitment of the no-action alternative would be continued sediment delivery to streams from the existing road network, and continued impact to riparian areas traversed by roads. Maintenance levels would be expected to remain the same in the existing conditions. There are no irreversible commitments from this alternative.

Cumulative Effects

In addition to the impacts of sediment delivery from roads and road impacts on riparian area and stream form and function, several past and present activities on federal land and lands of other ownership have affected and continue to affect water quality, water yield, and riparian health and vigor in the cumulative effects analysis area. Past timber harvest has likely caused temporary increases in water yield and sediment delivery in the past, though these effects generally attenuate over time. In the past, mining has contributed metals and sediment to stream channels in the watersheds. In some cases, ongoing mining activity continues to be a chronic source of sediment to streams and riparian degradation. Old mine workings can also pose chronic or episodic water quality problems to forest streams, as in the Beartrap Creek (upper Blackfoot) Mike Horse Dam failure of 1975. In addition, past pulses of elevated sediment (e.g., from timber harvest or mining) can remain stored in stream channels (banks, bed, floodplain) for many years following deposition. Continued grazing in riparian areas and cattle trailing along streams within grazing allotments would likely continue to contribute elevated sediment levels to streams in watersheds containing grazing allotments. In the absence of other reductions to sediment delivery in the watershed, streams in most of the watersheds within the Blackfoot travel planning area would continue to receive elevated levels of sediment.

In Blackfoot travel planning area watersheds, water yield most likely has been and would continue to be affected by large-scale tree mortality. Large-scale loss of live trees reduces the volume of water removed from a watershed by transpiration. Increases in water yield could result in higher peak flows than would otherwise occur—higher flows have the potential to increase stream bank and bed scour. None of the alternatives would measurably affect water yield.

Extensive tree mortality would also affect stream temperature in streams that cross the affected stands. However, understory vegetation, generally unaffected by insect mortality, would continue to provide shade. In addition, understory and riparian vegetation exposed to increased levels of sunlight (due to loss of overstory canopy) can expand and provide additional shade (Gravelle & Link, 2007). None of the alternatives would measurably influence stream temperature.

As discussed in appendix D, reasonably foreseeable future activities on federal land and lands of other ownership that could affect water quality (sediment) and yield, and riparian health and vigor in the cumulative effects analysis area include future timber harvest, small-scale mining or failure of old mines, continued livestock impacts, roads, and fire. Foreseeable timber harvest activities in the analysis area (e.g., Dalton Mountain Forest Restoration and Fuels Reduction Project, Stonewall Vegetation Management Project) are not likely to substantially affect water quality (sediment) or riparian area viability, assuming compliance with the Streamside Management Zone (SMZ) Law, INFISH standards, and strict adherence to forestry best management practices (BMPs) (USDA Forest Service 2012; Montana DNRC 2010; USDA Forest Service 1995).

If the no-action alternative is chosen, it is expected that impacts of roads on water quality (sediment) would continue at the current levels since no roads would be removed from the road system. Other than road decommissioning, activities that would serve to reduce sediment delivery to streams in project watersheds under the no-action alternative would likely be implemented periodically in the future within the cumulative effects analysis area. Such activities include road maintenance, watershed improvement projects, culvert upgrades, and effectively implemented allotment management plan (AMP) revisions, among others.

Forest Plan Consistency

Implementing alternative 1 would not move the planning area toward desired conditions for hydrologic resources, as defined in the Forest Plan; some water bodies in the planning area are not currently meeting state water quality standards (i.e., several streams are on the Montana 303(d) list of WQLS). Under this alternative, the Forest would not move toward meeting this Forest Plan standard because no measures targeted at improving water quality in streams within the Blackfoot travel planning area would be implemented (see appendix A).

Summary of Effects

Currently, full attainment of all beneficial uses in streams is not being met in several of the 6th-HUC watersheds within the Blackfoot travel planning area. In some of these impaired streams, beneficial uses are compromised due, at least in part, to land-use activities outside of HNF management. Under the no-action alternative, full attainment of all beneficial uses would still not be met in these watersheds. Although effects of forest roads and other management practices in place before April 1993 are exempt from this standard (MCA 75-5-317), in some cases, existing activities (e.g., forest roads) on the HNF managed portions of these watersheds might not meet the state requirement that “all reasonable land, soil and water conservation practices have been applied” (ARM 17.30.602) to minimize pollution. Exemption notwithstanding, many of these roads could be considered to “cause excessive water pollution” (Forest Plan, II/25) and should thus be “corrected where feasible” (ibid.), or stand in violation of the Forest Plan. Road maintenance will likely continue to be an issue across the planning area. However efforts are made on an annual basis to address maintenance issues to bring such roads into compliance with the state laws and forest plan standards. Alternative 1 would not decommission or put into storage any poorly maintained roads from the forest system, unlike the action alternative and does the least toward meeting the Forest Plan standard. Finally, planning for road decommissioning of unclassified roads in the Blackfoot travel planning area generally cannot move forward in the absence of a travel plan decision. With these matters considered, of the four alternatives, alternative 1 offers the fewest opportunities to reduce the impact of the HNF road network on water quality and riparian conditions.

Alternatives 2, 3 and 4

Project Design Features

Project design features and best management practices (BMPs) specific to hydrology are listed in chapter 2, page 43. Standard operating procedures and best management practices would continue to be applied to routine maintenance and on-going transportation system activities. These as well as the project design features listed in chapter 2, however, would apply to alternatives 2, 3and 4 and would reduce or eliminate adverse impacts from proposed activities. Monitoring of BMP application and effectiveness has been conducted by the Montana DNRC over the last decade. Part of the monitoring includes application and effectiveness of road planning, design, construction, drainage and maintenance. The BMP audits have documented that proper application of BMPs are effective in controlling of sediment delivery to streams (Montana Department of Natural Resources and Conservation [DNRC] 2000, 2002, 2004, 2006, 2008 and 2010).

Direct and Indirect Effects

Water yield would not be meaningfully affected by a decision under any alternative of the Blackfoot Travel Plan, as the area of trees gained would be insignificant with respect to basin water yield at the 6th -HUC scale. Decommissioning several hydraulically connected roads in a watershed might alter the flow regime marginally, as these high-efficiency vectors of runoff (roads) are removed from the landscape; although this too would be difficult to quantify.

Several of the NFS roads within the travel planning area have been surveyed for potential road sediment sources, a list of those roads are contained in the project record. Most road-stream crossings have potential for sediment delivery to the streams and sections of road within close proximity to streams also have potential to contribute sediment. Many of the roads that are sources of sediment to streams would remain open to vehicle traffic under all alternatives, although sediment delivery from these roads will continue to be mitigated by routine road maintenance activities. Road sediment surveys were done on many (but not all) roads that will be decommissioned or stored under the different alternatives. The data from these surveys were used to predict erosion and sediment delivery from these road segments, using WEPP. The model’s predictions are useful for comparison between the alternatives and are not comprehensive across the entire planning area.

All action alternatives include the closure, storage, or decommissioning of many existing unclassified routes. Some of the existing unclassified routes that are not proposed for closure, storage or decommissioning would become part of the designated route system. If other existing unclassified routes are discovered that are not currently captured in this analysis, these routes would not be identified as National Forest System routes and would therefore be closed to motorized use and legally unavailable to the public without further NEPA analysis. They would be available for possible future decommissioning. Some of the existing unclassified routes are detrimental to water quality and riparian area form and function; removing these routes would result in a substantial benefit to water quality and riparian health throughout the Blackfoot travel planning area. Alternative 2 would close, store or decommission 65 percent of these unclassified routes, alternative 3 would close, store or decommission 90 percent of these routes, and alternative 4 would close, store or decommission 88 percent of these routes. Unclassified routes were included with National Forest System routes in the analysis for miles of road decommissioned within 150 feet of a stream (table 27), estimated reduction in sediment delivery from decommissioning (table 26), and stream crossings decommissioned or restored (table 28).

All action alternatives also propose decommissioning. Decommissioning roads would benefit streams by removing impenetrable road surfaces within the watershed and restoring subsurface hydraulic conductivity (Lloyd 2013). This improved infiltration would reduce erosion of upland roads and decrease runoff into streams. Alternatives 2, 3 and 4 all propose some level of decommissioning (8 miles for alternative 2; 200 miles for alternative 3; and 212 miles for alternative 4) and many of these roads (table 26) are within 150 feet of stream channels, furthering the benefit to streams. Table 26 illustrates the estimated reduction in sediment delivery from road decommissioning within 150 feet of streams, by alternative. Decommissioning these routes would also restore their existing stream crossings, further benefiting water quality (table 27). The total miles of roads decommissioned within 150 feet of streams are displayed in table 27.

All action alternatives propose route storage. Stored routes would be closed to motorized use, but not fully decommissioned. These roads would be self-maintaining in non-use status for up to 20 years by recontouring access points, improving drainage, and removing culverts. Alternative 2 proposes the highest level of storage among the action alternatives (135 miles) with 76 miles proposed for alternative 3 and 82 miles for alternative 4 and many of these routes are within 150 feet of stream channels, furthering the benefit to streams. Storing these routes would also result in removal of culverts and restoration of existing stream crossings, benefiting water quality. Table 26 show the estimated reduction in sediment delivery from road storage by alternative. Table 29 shows the number of stream crossings that would be restored by alternative.

Each action alternative reduces the overall number of designated National Forest System routes in the planning area and includes road storage and decommissioning actions. However, each action alternative also includes some new route construction and reconstruction, and some currently unclassified routes would be added to the National Forest System as open roads or motorized trails. New routes within 150 feet of a stream and new stream crossings could develop new sediment sources to streams which would impact water quality, as well as affecting riparian areas. With the incorporation of BMPs, those new roads and stream crossings can be designed to minimize sediment delivery to streams and impacts to riparian areas. However, those impacts may never be eliminated, and therefore new roads were considered an adverse impact when comparing the alternatives. Current unclassified roads near streams that would be added to the National Forest System may presently be an existing adverse impact to streams and riparian areas. However, adding these roads to the National Forest System would put them in the maintenance schedule, and performing routine maintenance and inspections on these routes could improve the effect on the hydrologic condition because the BMPs prescribed above would be incorporated into road maintenance. This hydrology section only analyzes effects of roads within 150 feet of a stream; roads constructed outside of this buffer may still present negative impacts to the hydrologic resource. With the incorporation of BMPs, those new roads can be designed to minimize impacts to the hydrologic resource.

Road reconstruction that occurs within the 150-foot buffer from streams could result in an improved hydrologic condition because the BMPs prescribed above would be incorporated into road reconstruction.

Alternatives 2, 3 and 4 would permit wheeled motorized use within 300 feet of a designated road or trail for the purpose of dispersed camping or parking associated with dispersed camping. See chapter 2 for a detailed description. Effectiveness monitoring would occur based on available staff and funding. Wheeled motorized vehicle travel for camping and parking associated with camping would be allowed within 300 feet of the edge of designated Forest System routes (unless signed otherwise) as long as:

- No new permanent routes are created by this activity
- No damage to existing vegetation, soil, or water resources occurs
- Travel off-route does not cross streams
- Travel off-route does not traverse riparian or wet areas
- Recreationalists will use the most direct route to disperse camp
- Recreationalists must select their site by non-motorized means

Dispersed recreation sites currently exist and are heavily used within the planning area. Implementation of any of the action alternatives would provide for the monitoring and enforcement of provisions for resource protection, and would ensure that adverse impacts are minimized, as described in chapter 2. This component is particularly important to the hydrologic resource. It is difficult to quantify the positive impact these restrictions will have on the hydrologic resource. However, removing a sediment source form a stream is a positive effect and allowing riparian vegetation to reestablish where a recreation site will be removed will be a positive effect.

Enforcement of the designations on the motor vehicle use map (MVUM) would necessarily be intensive in the early stages of implementation, but would reduce over time as the public becomes more familiar with the new regulations on the Forest. The implementation of alternatives 2, 3 or 4 ensures monitoring of dispersed sites and enforcement of the designations on the MVUM, and would help to prevent additional damage to the hydrologic resource by minimizing the potential adverse effects of off-road travel.

Many dispersed sites are located adjacent to or provide access to lakes and rivers, and lack the design features found at developed sites to mitigate the potential adverse impacts from use. As a result, the impacts of dispersed recreation use on soils, water quality, and riparian resources can be greater than impacts at developed sites. Nonpoint source pollution from dispersed recreation includes human and animal wastes, petroleum products and other hazardous substances, streambank disturbance, stream channel alteration, and sediment eroded from the site. Chapter 2 describes non-discretionary project design features that would be implemented for the action alternatives. These minimization criteria would apply to existing dispersed recreation sites, and therefore the effects to water resources would not differ among alternatives, and would ensure that adverse effects to water resources from dispersed use would be minimized.

Alternative 4 has the most miles of road within 150 feet of a stream to be decommissioned, and the most stream crossings restored. Although not all roads proposed for decommissioning were surveyed or modeled, sediment modeling on surveyed routes provides an estimate of the potential this project has for sediment reduction to streams in the planning area. Model results of surveyed roads suggested that alternative 4 has the greatest potential to reduce sediment delivery to streams compared to the other action alternatives.

Alternative 4 has the fewest miles of unclassified roads added to the National Forest System between all the action alternatives. It has one more stream crossing added to the National Forest System than alternative 3. Alternative 2 has the most miles of unclassified roads added to the National Forest System. These are existing roads that have the potential for adverse impacts to streams and riparian areas. However, adding these roads to the National Forest System would put them in the maintenance schedule. Maintenance and upgrades to stream crossings could be used to alleviate sediment from these roads and crossings.

Alternative 3 and 4 have the most miles of new construction or reconstruction within 150-feet of a stream. New routes within 150 feet of a stream and new stream crossings would have an adverse impact to stream channels, water quality, and riparian areas. However, this adverse impact would be minimized by the implementation of BMPs and project design features to minimize sediment delivery to streams. The number of new stream crossings to be constructed is the same for all alternatives.

New road construction planned for alternative 2 within the 150-foot stream buffer occurs in the Blackfoot River-Lincoln HUC and the Lower Alice Creek HUC. The new road construction within the Lincoln Creek HUC would occur near an unnamed intermittent stream and includes one crossing. The new road construction in the Lower Alice Creek HUC would occur near Bartlett Creek and an unnamed intermittent tributary to Bartlett Creek, and would cross both of the streams. In the Blackfoot River – Lincoln HUC, under alternative 2, there is no proposed road decommissioning within 150-feet of streams and no proposed stream crossing removal or decommissioning. However, under alternative 2 there would be 2 potential culverts or stream crossings restored on storage roads. In the Lower Alice Creek HUC, under alternative 2, there is no proposed road decommissioning within 150-feet of streams and no proposed stream crossing removal or decommissioning. However, under alternative 2 there would be 13 potential culverts removed or stream crossings restored on storage roads. Therefore, implementation of alternative 2 would result in a net increase of 0.2 miles of road within 150 feet of streams (table 30), but in both impacted HUCs would result in a net decrease in the number of stream crossings due to the actions on storage roads.

In alternatives 3 and 4, 0.8 miles of new road construction or reconstruction is planned within the 150-foot stream buffer in Blackfoot River – Anaconda Creek, Hogum Creek, Keep Cook Creek and Lincoln Creek HUCs. The overall impacts to those watersheds are described in the following paragraphs.

In alternatives 3 and 4, the road reconstruction that is occurring in the Blackfoot River – Anaconda Creek HUC is occurring within 150-feet of Cadotte Creek, a perennial flowing stream. Currently the road crosses the stream several times; reconstruction sections of the road would eliminate some of those stream crossings and the reconstructed segments would contain zero stream crossings. If the road reconstruction efforts incorporate the BMPs prescribed above, there would be an improvement to the hydrologic condition in Cadotte Creek.

In alternatives 3 and 4 there would be 0.2 miles of new construction in the Hogum Creek HUC within 150 feet of an unnamed intermittent stream with no new stream crossing. Under both alternative 3 and 4, there would be 0.7 miles of road decommissioning within 150-feet of streams and 5 stream crossings decommissioned and restored. Therefore with the implementation of alternative 3 or 4 there would be a net decrease of 0.5 miles of roads within 150-feet of streams and 5 less stream crossings in the Hogum Creek HUC.

In Keep Cook Creek HUC there would be 0.02 miles of new route construction within 150 feet of an unnamed intermittent stream with no new stream crossing. Under alternative 3 there would be 1.2 miles and under alternative 4 there would be 1.3 miles of road decommissioned within 150-feet of streams. This decommissioning would include restoration of 6 and 7 stream crossings respectively. Implementation of either alternative 3 or 4 would result in a net decrease of 1.2 or 1.3 miles or roads within 150-feet of streams and a net decrease of 6 or 7 stream crossings respectively. Additionally, alternative 3 would restore 8 stream crossings on storage roads and alternative 4 would restore 3 crossings on storage roads.

The 0.1 miles of new road construction within the Lincoln Creek HUC would occur near an unnamed intermittent stream and would include one crossing (same as in alternative 2). Under alternative 3 there would be 1.1 miles and under alternative 4 there would be 1.2 miles of road decommissioned within 150 feet of streams. This decommissioning would include restoration of 2 and 3 stream crossings respectively. Implementation of either alternative 3 or 4 would result in a net decrease of 1.0 or 1.1 miles or roads within 150 feet of streams and a net decrease of 2 or 3 stream crossings respectively. Additionally, alternative 3 would restore no stream crossings on storage roads and alternative 4 would restore two crossings on storage roads.

Only in alternative 4 would there be 0.1 miles of road construction within the Lower Alice Creek HUC that would occur within 150 feet of Alice Creek, but would not include a stream crossing. In alternative 4 there would be 4.9 miles of road decommissioning within 150 feet and 20 stream crossings decommissioned and restored. Therefore the net decrease of roads within 150-feet of streams would be 4.8 miles under alternative 4.

Overall, alternative 4 has fewer stream crossings to be restored on storage roads than does alternative 3 or alternative 2, but this number is misleading because many of the roads designated for storage in alternative 2 or 3 would be decommissioned in alternative 4.

Implementation of either alternative 3 or 4 would have the greatest benefit to the hydrologic condition in watersheds with streams listed for sediment impairment on the Montana 303(d) list. These eleven watersheds are highlighted in the following tables with shading. Two of these watersheds (Washington Creek and Ward Creek) would not realize a benefit through the implementation of any of the action alternatives (measurement indicators chapter 2). There would be no estimated reduction in sediment in these two watersheds based on route closure, decommissioning, or storage, or culvert or stream crossing restoration. Alternatives 3 and 4, however, do propose to decommission several miles of roads in the upland areas of the headwaters of Ward Creek resulting in an overall watershed benefit not captured in this analysis. In Washington Creek HUC, there is limited road decommissioning or storage opportunities on NFS roads, and the impairments on Washington Creek within the NFS lands are related to mining activities.

Programmatic Forest Plan Amendment for Management Areas N1 (Granite Butte proposed research natural area) and R1 (Nevada Mountain)

Implementing the action alternatives would also require a programmatic plan amendment for the N1 and R1 management areas (R1 not required in alternative 3, see chapter 2) to allow continued use of trails in these areas. This is described in detail in the FEIS. The plan amendment is a programmatic action and does not authorize site-specific activities and therefore has no impact to the hydrologic resource. The routes affected by the programmatic amendment are existing routes and were incorporated into this analysis.

Programmatic Forest Plan Big Game Security Amendment

Implementing any action alternative for this project would require a programmatic Helena National Forest Plan amendment for the planning area regarding the standard for big game security index as described in Chapter 2. This proposed amendment would not impact the hydrologic resource in a measurable way because managing road closures in the fall months, while decreasing traffic on those roads, would not remove those roads from the system, nor would it reduce the number of stream crossings associated with those roads. Simply changing the date of closure would not impact any of the measurement indicators associated with water quality or the hydrologic resource.

Table 26. Partial estimates of current average sediment delivery and predicted reduction in sediment delivery by action alternative due to proposed road decommissioning and proposed stream crossing restoration on storage roads by alternative

Drainage	Modeled Sediment Delivery (tons/year)	Alternative 2				Alternative 3				Alternative 4			
		Reduction in Sediment Delivery (tons/year)		Reduction in Sediment Delivery (percent)		Reduction in Sediment Delivery (tons/year)		Reduction in Sediment Delivery (percent)		Reduction in Sediment Delivery (tons/year)		Reduction in Sediment Delivery (percent)	
	Existing (Alternative 1)	Decom	Storage	Decom	Storage	Decom	Storage	Decom	Storage	Decom	Storage	Decom	Storage
Arrastra Creek	2.9	0	0.08	0%	3%	0	0.08	0%	3%	0	0.08	0%	3%
Beaver Creek	8.3	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%
Blackfoot River-Anaconda Creek	30.6	0	0.03	0%	0%	0.02	0.00	0%	0%	0.02	0.00	0%	0%
Blackfoot River-Lincoln	0.4	0	0	0%	0%	0.32	0	84%	0%	0.32	0	84%	0%
Blackfoot River-Willow Creek	2.4	0	0.65	0%	27%	0	0.65	0%	27%	0	0.65	0%	27%
Buffalo Gulch	0.7	0	0.03	0%	5%	0	0.03	0%	5%	0	0.03	0%	5%
Copper Creek	55.2	0	0	0%	0%	0	0	0%	0%	1.89	0	3%	0%
Hogum Creek	20.1	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%
Humbug Creek	0.3	0.29	0	100%	0%	0.29	0	100%	0%	0.29	0	100%	0%

Drainage	Modeled Sediment Delivery (tons/year)	Alternative 2				Alternative 3				Alternative 4			
		Reduction in Sediment Delivery (tons/year)		Reduction in Sediment Delivery (percent)		Reduction in Sediment Delivery (tons/year)		Reduction in Sediment Delivery (percent)		Reduction in Sediment Delivery (tons/year)		Reduction in Sediment Delivery (percent)	
	Existing (Alternative 1)	Decom	Storage	Decom	Storage	Decom	Storage	Decom	Storage	Decom	Storage	Decom	Storage
Jefferson Creek	17.2	0	0	0%	0%	0.06	0	0%	0%	0.06	0	0%	0%
Keep Cool Creek	6.8	0	0	0%	0%	0.01	1.71	0%	25%	0.01	1.71	0%	25%
Lincoln Creek	3.8	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%
Little Prickly Pear Creek-Marsh Creek	3.6	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%
Lower Alice Creek	0.1	0	0.002	0%	4%	0.06	0	100%	0%	0.06	0	100%	0%
Lower Nevada Creek	1.1	0	0.00	0%	0%	0	0	0%	0%	0	0.01	0%	1%
Middle Nevada Creek	2.5	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%
Nevada Creek Headwaters	0.1	0	0	0%	0%	0	0	0%	0%	0	0.04	0%	64%
Poorman Creek	13.1	0	1.10	0%	8%	0	1.10	0%	8%	0.01	1.10	0%	8%
Rock Creek	0.2	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%

Drainage	Modeled Sediment Delivery (tons/year)	Alternative 2				Alternative 3				Alternative 4			
		Reduction in Sediment Delivery (tons/year)		Reduction in Sediment Delivery (percent)		Reduction in Sediment Delivery (tons/year)		Reduction in Sediment Delivery (percent)		Reduction in Sediment Delivery (tons/year)		Reduction in Sediment Delivery (percent)	
	Existing (Alternative 1)	Decom	Storage	Decom	Storage	Decom	Storage	Decom	Storage	Decom	Storage	Decom	Storage
Sauerkraut Creek	11.4	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%
Upper Alice Creek	0.4	0.17	0	45%	0%	0.17		45%	0%	0.17	0	45%	0%
Virginia Creek	93.6	0	0.45	0%	0%	1.41	0.04	2%	0%	1.43	0	2%	0%
Willow Creek	10.9	0	0	0%	0%	0.01		0%	0%	0.01	0	0%	0%
Totals	**285.4**	**0.5**	**2.3**	**--**	**--**	**2.4**	**3.6**	**--**	**--**	**4.3**	**3.6**	**--**	**--**

Gray shading indicates 6th -HUC watersheds that contain streams listed as impaired by sediment by the Montana DEQ

Table 27. Miles of road within 150 feet of a stream channel that would be decommissioned, by alternative and 6th -HUC watershed

6th -HUC Code	6th-HUC Name	Alternative 1	Alternative 2	Alternative 3	Alternative 4
170102030309	Arrastra Creek	0	0	0.1	0.1
170102030303	Beaver Creek	0	0	0.2	0.2
170102030202	Blackfoot River-Anaconda Creek	0	0	4.6	4.6
170102030206	Blackfoot River-Hardscrabble Creek	0	0	0	0
170102030308	Blackfoot River-Lincoln	0	0	1.9	1.9
170102030310	Blackfoot River-Little Moose Creek	0	0	0.9	0.9
170102030201	Blackfoot River-Willow Creek	0	0	2.2	2.2
170102030405	Buffalo Gulch	0	0	0	0
170102030103	Copper Creek	0	0	0.1	0.1
170102030205	Hogum Creek	0	2.7	0.7	0.7
170102030301	Humbug Creek	0	0.0	2.7	2.7
170102030404	Jefferson Creek	0	0	0.2	0.2
170102030304	Keep Cool Creek	0	0	1.2	1.3
170102030305	Lincoln Creek	0	0	1.1	1.2
100301011803	Little Prickly Pear Creek-Marsh Creek	0	0	0.1	0.1
170102030204	Lower Alice Creek	0	0	5.0	4.9
100301011807	Lower Canyon Creek	0	0	0.2	0.2
170102030104	Lower Landers Fork	0	0	0	0
170102030415	Lower Nevada Creek	0	0	1.0	1.0
100301011903	Lyong Creek	0	0	0	0
100301020203	Middle Fork Dearborn River	0	0	0	0
170102030407	Middle Nevada Creek	0	0	0.6	0.6
170102030401	Nevada Creek Headwaters	0	0	0	0
170102030302	Poorman Creek	0	0	3.6	3.7
170102030703	Rock Creek	0	0	0	0
170102030307	Sauerkraut Creek	0	0.2	0.2	0.2
170102030203	Upper Alice Creek	0	0.3	0.3	0.3
100301011805	Upper Canyon Creek	0	0	4.3	4.3
100301020401	Upper South Fork Dearborn River	0	0	0.7	0.7
100301011804	Virginia Creek	0	0	1.4	2.9
170102030704	Ward Creek	0	0	0	0
170102030403	Washington Creek	0	0	0	0
170102030306	Willow Creek	0	0	0.4	0.4
100301011905	Wolf Creek	0	0	0	0

6th -HUC Code	6th-HUC Name	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	Total	**0**	**3.2**	**33.8**	**35.5**

Shading indicates 6th-HUC watersheds that contain streams listed as impaired by sediment by the Montana DEQ

Table 28. Number of stream crossings to be decommissioned and restored by alternative, by 6th -HUC.

6th -HUC Code	6th -HUC Name	Number of Stream Crossings			
		Alternative 1	Alternative 2	Alternative 3	Alternative 4
170102030309	Arrastra Creek	0	0	1	1
170102030303	Beaver Creek	0	0	1	1
170102030202	Blackfoot River-Anaconda Creek	0	0	16	16
170102030206	Blackfoot River-Hardscrabble Creek	0	0	0	0
170102030308	Blackfoot River-Lincoln	0	0	5	5
170102030310	Blackfoot River-Little Moose Creek	0	0	4	4
170102030201	Blackfoot River-Willow Creek	0	0	7	7
170102030405	Buffalo Gulch	0	0	0	0
170102030103	Copper Creek	0	0	2	2
170102030205	Hogum Creek	0	0	5	5
170102030301	Humbug Creek	0	12	12	12
170102030404	Jefferson Creek	0	0	1	1
170102030304	Keep Cool Creek	0	0	6	7
170102030305	Lincoln Creek	0	0	2	3
100301011803	Little Prickly Pear Creek-Marsh Creek	0	0	0	0
170102030204	Lower Alice Creek	0	0	21	20
100301011807	Lower Canyon Creek	0	0	1	1
170102030104	Lower Landers Fork	0	0	0	0
170102030415	Lower Nevada Creek	0	0	2	2
100301011903	Lyong Creek	0	0	0	0
100301020203	Middle Fork Dearborn River	0	0	0	0
170102030407	Middle Nevada Creek	0	0	2	2
170102030401	Nevada Creek Headwaters	0	0	0	0
170102030302	Poorman Creek	0	0	14	13
170102030703	Rock Creek	0	0	0	0
170102030307	Sauerkraut Creek	0	2	2	2
170102030203	Upper Alice Creek	0	3	3	3
100301011805	Upper Canyon Creek	0	0	7	7
100301020401	Upper South Fork Dearborn River	0	0	3	3

6th -HUC Code	6th -HUC Name	Number of Stream Crossings			
		Alternative 1	Alternative 2	Alternative 3	Alternative 4
100301011804	Virginia Creek	0	0	8	11
170102030704	Ward Creek	0	0	0	0
170102030403	Washington Creek	0	0	0	0
170102030306	Willow Creek	0	0	3	3
100301011905	Wolf Creek	0	0	0	0
	Totals	**0**	**17**	**128**	**131**

Gray shading indicates 6th-HUC watersheds that contain streams listed as impaired by sediment by the Montana DEQ

Table 29. Number of potential culverts that would be removed, and stream crossings to be restored on storage roads

6th -HUC	6th -HUC Name	Alternative 1	Alternative 2	Alternative 3	Alternative 4
170102030309	Arrastra Creek	0	4	3	4
170102030303	Beaver Creek	0	6	6	6
170102030202	Blackfoot River-Anaconda Creek	0	9	5	5
170102030206	Blackfoot River-Hardscrabble Creek	0	0	0	0
170102030308	Blackfoot River-Lincoln	0	2	0	0
170102030310	Blackfoot River-Little Moose Creek	0	3	0	0
170102030201	Blackfoot River-Willow Creek	0	4	3	3
170102030405	Buffalo Gulch	0	2	2	2
170102030103	Copper Creek	0	1	0	0
170102030205	Hogum Creek	0	1	0	0
170102030301	Humbug Creek	0	0	0	0
170102030404	Jefferson Creek	0	0	0	0
170102030304	Keep Cool Creek	0	3	8	3
170102030305	Lincoln Creek	0	0	0	2
100301011803	Little Prickly Pear Creek-Marsh Creek	0	0	0	0
170102030204	Lower Alice Creek	0	13	0	0
100301011807	Lower Canyon Creek	0	0	0	0
170102030104	Lower Landers Fork	0	0	0	0
170102030415	Lower Nevada Creek	0	2	0	3
100301011903	Lyong Creek	0	0	0	0
100301020203	Middle Fork Dearborn River	0	0	0	0
170102030407	Middle Nevada Creek	0	4	3	3

6th -HUC	6th -HUC Name	Alternative 1	Alternative 2	Alternative 3	Alternative 4
170102030401	Nevada Creek Headwaters	0	3	3	5
170102030302	Poorman Creek	0	8	8	8
170102030703	Rock Creek	0	0	0	0
170102030307	Sauerkraut Creek	0	0	0	0
170102030203	Upper Alice Creek	0	0	0	0
100301011805	Upper Canyon Creek	0	4	0	0
100301020401	Upper South Fork Dearborn River	0	0	0	0
100301011804	Virginia Creek	0	10	6	3
170102030704	Ward Creek	0	0	0	0
170102030403	Washington Creek	0	0	0	0
170102030306	Willow Creek	0	3	2	2
100301011905	Wolf Creek	0	0	0	0
	Totals	**0**	**82**	**49**	**49**

Gray shading indicates 6th-HUC watersheds that contain streams listed as impaired by sediment by the Montana DE

Table 30. Miles of new motorized route construction or reconstruction within 150-feet of a stream channel and new stream crossings under each alternative

6th -HUC	6th -HUC Name	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
		Miles of New Construction or reconstruction	# New Stream Crossings	Miles of New Construction or reconstruction	# New Stream Crossings	Miles of New Construction or reconstruction	# New Stream Crossings	Miles of New Construction or reconstruction	# New Stream Crossings
170102030202	Blackfoot River-Anaconda Creek	0.0	0	0.0	0	0.5		0.5	
170102030205	Hogum Creek	0.0	0	0.0	0	0.2	2	0.2	2
170102030304	Keep Cool Creek	0.0	0	0.0	0	0.02		0.02	
170102030305	Lincoln Creek	0.0	0	0.1	1	0.1	1	0.1	1
170102030204	Lower Alice Creek	0.0	0	0.1	2	0.0		0.1	
	Totals	**0.0**	**0**	**0.2**	**3**	**0.8**	**3**	**0.8**	3

Table 31. Miles of unclassified roads within 150-feet of a stream channel added to the National Forest System in the form of open routes

6th -HUC	6th -HUC Name	Alternative 1	Alternative 2	Alternative 3	Alternative 4
170102030309	Arrastra Creek	0	0.1	0.0	0.0
170102030303	Beaver Creek	0	0.3	0.1	0.1
170102030202	Blackfoot River-Anaconda Creek	0	0.3	0.0	0.0
170102030206	Blackfoot River-Hardscrabble Creek	0	0.0	0.0	0.0
170102030308	Blackfoot River-Lincoln	0	1.5	0.0	0.0
170102030310	Blackfoot River-Little Moose Creek	0	0.0	0.0	0.0
170102030201	Blackfoot River-Willow Creek	0	1.8	0.0	0.0
170102030405	Buffalo Gulch	0	0.0	0.0	0.0
170102030103	Copper Creek	0	0.1	0.0	0.0
170102030205	Hogum Creek	0	0.6	0.4	0.4
170102030301	Humbug Creek	0	0.0	0.0	0.0
170102030404	Jefferson Creek	0	0.4	0.4	0.4
170102030304	Keep Cool Creek	0	1.2	0.0	0.0
170102030305	Lincoln Creek	0	1.2	0.1	0.0
100301011803	Little Prickly Pear Creek-Marsh Creek	0	0.1	0.0	0.0
170102030204	Lower Alice Creek	0	0.0	0.0	0.0
100301011807	Lower Canyon Creek	0	0.2	0.0	0.0
170102030104	Lower Landers Fork	0	0.0	0.0	0.0
170102030415	Lower Nevada Creek	0	0.0	0.0	0.0
100301011903	Lyong Creek	0	0.0	0.0	0.0
100301020203	Middle Fork Dearborn River	0	0.0	0.0	0.0
170102030407	Middle Nevada Creek	0	0.1	0.0	0.0
170102030401	Nevada Creek Headwaters	0	0.0	0.0	0.0
170102030302	Poorman Creek	0	2.1	0.0	0.7
170102030703	Rock Creek	0	0.0	0.0	0.0
170102030307	Sauerkraut Creek	0	0.0	0.0	0.0
170102030203	Upper Alice Creek	0	0.0	0.0	0.0
100301011805	Upper Canyon Creek	0	2.2	0.0	0.0
100301020401	Upper South Fork Dearborn River	0	0.1	0.0	0.0
100301011804	Virginia Creek	0	0.6	0.0	0.0
170102030704	Ward Creek	0	0.0	0.0	0.0
170102030403	Washington Creek	0	0.0	0.0	0.0
170102030306	Willow Creek	0	0.2	0.0	0.0
100301011905	Wolf Creek	0	0.0	0.0	0.0
	Totals	**0.0**	**13.1**	**1.1**	**1.7**

Gray shading indicates 6th-HUC watersheds that contain streams listed as impaired by sediment by the Montana DEQ

Table 32. Number of stream crossings added to the National Forest System via unclassified routes summarized by 6th-HUC watershed

6th -HUC	6th -HUC Name	Alternative 1	Alternative 2	Alternative 3	Alternative 4
170102030309	Arrastra Creek	0	1	0	0
170102030303	Beaver Creek	0	2	1	1
170102030202	Blackfoot River-Anaconda Creek	0	0	0	0
170102030206	Blackfoot River-Hardscrabble Creek	0	0	0	0
170102030308	Blackfoot River-Lincoln	0	2	0	0
170102030310	Blackfoot River-Little Moose Creek	0	0	0	0
170102030201	Blackfoot River-Willow Creek	0	5	0	0
170102030405	Buffalo Gulch	0	0	0	0
170102030103	Copper Creek	0	1	0	0
170102030205	Hogum Creek	0	2	2	2
170102030301	Humbug Creek	0	0	0	0
170102030404	Jefferson Creek	0	2	2	2
170102030304	Keep Cool Creek	0	6	0	0
170102030305	Lincoln Creek	0	3	1	0
100301011803	Little Prickly Pear Creek-Marsh Creek	0	0	0	0
170102030204	Lower Alice Creek	0	0	0	0
100301011807	Lower Canyon Creek	0	1	0	0
170102030104	Lower Landers Fork	0	0	0	0
170102030415	Lower Nevada Creek	0	0	0	0
100301011903	Lyong Creek	0	0	0	0
100301020203	Middle Fork Dearborn River	0	0	0	0
170102030407	Middle Nevada Creek	0	1	0	0
170102030401	Nevada Creek Headwaters	0	0	0	0
170102030302	Poorman Creek	0	7	0	2
170102030703	Rock Creek	0	0	0	0
170102030307	Sauerkraut Creek	0	0	0	0
170102030203	Upper Alice Creek	0	0	0	0
100301011805	Upper Canyon Creek	0	2	0	0
100301020401	Upper South Fork Dearborn River	0	1	0	0
100301011804	Virginia Creek	0	0	0	0
170102030704	Ward Creek	0	0	0	0
170102030403	Washington Creek	0	0	0	0
170102030306	Willow Creek	0	2	0	0
100301011905	Wolf Creek	0	0	0	0
	Totals	**0**	**38**	**6**	**7**

Gray shading indicates 6th-HUC watersheds that contain streams listed as impaired by sediment by the Montana DEQ

Irreversible and Irretrievable Commitments

An irretrievable commitment of the action alternatives would be continued sediment delivery to streams from the existing road network, and continued impact to riparian areas traversed by roads that remain open as a result of this decision. Another irretrievable commitment to the action alternatives would be greater difficulty in the future to decommission roads known to have water quality problems that are designated as open to wheeled traffic for at least part of the year by this decision. While future closing and decommissioning of any road is not precluded by an "open" classification in this travel plan, the hurdle to accomplish this would be higher. There are no irreversible commitments from these alternatives.

Cumulative Effects

Spatial and Temporal Context for Effects Analysis

The spatial scale of analysis is the 6th-field HUC boundaries. This is an appropriate scale for this analysis given the types of watershed impacts that are associated with road networks (e.g. increased sediment delivery) are generally discernible at the 6th-HUC scale. The temporal scale of the analysis for all effects is greater than 5 years, given that the decision to designate a route as either opened or closed does not necessarily determine whether that route would have a reduced, neutral, or increased impact on water resources in the short term (less than 5 years).

Past, Present, and Reasonably Foreseeable Activities Relevant to Cumulative Effects Analysis

As discussed previously, the main effect this travel plan influences is the water quality impacts due to sediment flowing from roads. All action alternatives would reduce the cumulative watershed effects of road sediment delivery through decommissioning of NFS roads; specifically those that cross or closely parallel stream networks. The impacts of roads on water quality, as outlined in the Affected Environment section of this report, would be altered as a direct result of any of the action alternatives. Furthermore, through this decision all action alternatives would facilitate the decommissioning of unclassified routes which would also decrease the amount of sediment reaching streams. Under any of the action alternatives certain parts of the transportation system will remain chronic sources of sediment, including open and closed roads especially those roads that encroach on the stream or riparian area. Maintenance activities incorporating BMPs would help to reduce or eliminate those sediment sources or impacts to stream and riparian areas.

In addition to the impacts of sediment delivery from roads and road impacts on riparian area and stream form and function, several past and present activities on federal land and lands of other ownership have affected and continue to affect water quality and yield, and riparian health and vigor in the cumulative effects analysis area. A detailed list of those past, present and reasonably foreseeable future actions are included in appendix D. Only those that are relevant to the hydrologic resource are discussed in general below.

Past timber harvest has likely caused temporary increases in water yield and sediment delivery, though these effects generally attenuate over time. In the past, mining has contributed metals and sediment to stream channels in the watersheds. In some cases, ongoing mining activity continues to be a chronic source of sediment to streams and riparian degradation. Past pulses of elevated sediment (e.g. from timber harvest or mining) can remain stored in stream channels (banks, bed, floodplain) for many years following deposition. Continued grazing in riparian areas and cattle trailing along streams within grazing allotments would likely continue to contribute elevated sediment levels to streams in watersheds with grazing allotments. Thus, some past and ongoing activities have been and continue to generate elevated sediment delivery, whereas other activities would reduce sediment delivery.

Water yield likely has been and would continue to be affected by large-scale tree mortality in planning-area watersheds. Large-scale loss of live trees reduces the volume of water removed from a watershed by transpiration. Increases in water yield could result in higher peak flows than would otherwise occur—higher flows have the potential to increase stream bank and bed scour. As discussed above, none of the alternatives would meaningfully affect water yield.

Extensive tree mortality would also affect stream temperature in streams that cross the affected stands. However, understory vegetation, generally unaffected by insect mortality, would continue to provide shade. Furthermore, understory and riparian vegetation exposed to increased levels of sunlight (due to loss of overstory canopy) can expand and provide additional shade (Gravelle & Link, 2007). None of the alternatives would measurably influence stream temperature.

Reasonably foreseeable future activities on federal land and lands of other ownership that could affect water quality and yield, and riparian health and vigor in the cumulative effects analysis area include future timber harvest, small-scale mining or failure of old mines, large-scale mine waste cleanup operations (e.g. Upper Blackfoot Mining Complex Cleanup) continued livestock impacts, roads, and fire.

Foreseeable timber harvest and prescribed fire activities in the analysis area (e.g. Helmville Face, Dalton Mountain Forest Restoration and Fuels Reduction Projects or Stonewall Project) on National Forest System land are not likely to substantially affect water quality or riparian area viability, assuming compliance with the SMZ Law and strict adherence to forestry BMPs (Montana DNRC, 2008). Timber-sale road improvements (e.g. Stonewall Project) would be expected to reduce sediment delivery from project-area roads through implementation of road BMPs. The impacts of roads on water quality, as outlined in the Affected Environment section of this report, would not be altered as a direct result of the action alternatives. However, the action alternatives lay the groundwork for future road decommissioning, which would reduce sediment delivery from forest roads. Other activities that would serve to reduce sediment delivery to streams in project watersheds are planned in the future within the cumulative effects analysis area. Such activities include watershed improvement projects (e.g. Stonewall and Sauerkraut Creek Restoration Projects), culvert upgrades, and effectively implemented allotment management plan (AMP) revisions, among others.

The action alternatives would positively influence stream temperature along and downstream from segments of stream where roads and crossings are decommissioned and native riparian vegetation restored. This would be a long-term beneficial effect as vegetation matures, but would be difficult to quantify.

Conclusions

Alternative 1 – No Action

Currently, full attainment of all beneficial uses in streams is not being met in several of the 6th -HUC watersheds within the travel planning area. In some of these impaired streams, beneficial uses are compromised due, at least in part, to land-use activities on lands of other ownerships. Under the no-action alternative, full attainment of all beneficial uses would still not be met in these watersheds. Although effects of forest roads and other management practices in place before April 1993 are exempt from this standard (MCA 75-5-317), in some cases, existing activities (e.g., forest roads) on the HNF managed portions of these watersheds might not meet the state requirement that “all reasonable land, soil and water conservation practices have been applied" (ARM 17.30.602) to minimize pollution. Exemption notwithstanding, many of these roads could be considered to "cause excessive water pollution" (HNF Forest Plan, II/25) and should thus be "corrected where feasible" (ibid.), or stand in violation of the Forest Plan. Finally, watershed improvements such as road decommissioning cannot move forward in the absence of a travel plan decision. With these matters considered, of the four alternatives, alternative 1 offers the fewest opportunities to reduce the impact of the Helena National Forest transportation system on water quality and riparian conditions.

Alternatives 2, 3 and 4

Alternatives 2, 3 and 4 contain specific road closure measures and all would reduce the miles of designated National Forest System roads in the planning area. Each alternative to varying degrees, proposes road storage and decommissioning which would improve watershed conditions and reduce sediment delivery to streams. The action alternatives would somewhat alleviate current water quality problems in the planning area through planned road decommissioning with implementation of the decision. In addition, the action alternatives would facilitate the decommissioning of unclassified roads, several of which are water-resource concerns. In contrast to the no-action alternative, the action alternatives represent substantial watershed improvements, and are consistent with the Forest Plan direction on the maintenance of acceptable water quality in forest streams. Furthermore, the implementation of this plan would move the Forest toward meeting the Blackfoot Headwaters and the Nevada Creek TMDL sediment reduction goals.

Implementation of alternatives 3 or 4 would have the greatest benefit to hydrologic condition in watersheds with streams listed for sediment impairment on the Montana 303(d) list (table 32). By the standards presented in this report, two watersheds would not realize a benefit through the implementation of any of the action alternatives: Washington Creek and Ward Creek. In Ward Creek, under alternatives 3 and 4 there are several miles of roads that would be decommissioned in the upland areas of the headwaters of Ward Creek; there are no miles of road decommissioning in alternative 2. There is very limited opportunities for road decommissioning or road storage in Ward Creek watershed due to the land ownership, the majority of the roads in the watershed are on privately held lands. The overall Ward Creek watershed would benefit from the upland roads being decommissioned. In Washington Creek HUC, there is limited road decommissioning or storage opportunities on Forest System roads due to land ownership, and the impairments on Washington Creek within National Forest System lands are related to mining activities in that drainage.

Alternatives 2, 3 and 4 would permit wheeled motorized use within 300-feet of a road or trail, as described in chapter 2. Implementation of any of the action alternatives would provide for the monitoring and enforcement of the provisions for resource protection and would ensure that adverse impacts are minimized, as described in chapter 2:

- Creating any new permanent routes
- Damaging existing vegetation, soil, or water resource
- Crossing streams, riparian or wet areas

Monitoring and enforcement of the provisions for resource protection is particularly important to the hydrologic resource. It is difficult to quantify the positive impact these restrictions would have on the hydrologic resource. Many dispersed sites are located adjacent to or provide access to lakes and rivers and lack the design features found at developed sites to mitigate negative impacts of use. As a result, the impacts of dispersed recreation use on soils, water quality, and riparian resources can be greater than impacts at developed sites. Nonpoint source pollution from dispersed recreation includes human and animal wastes, petroleum products and other hazardous substances, streambank disturbance, stream channel alteration, and sediment eroded from the site. Chapter 2 includes non-discretionary project design features that would be implemented for the action alternatives. These minimization criteria (as spelled out in Chapter 2) would apply to existing dispersed recreation sites, and therefore the effect to water resources would not differ among alternatives and would ensure that adverse effects to water resources from dispersed use would be minimized.

Implementing any action alternative for this project would require a programmatic Helena National Forest Plan amendment for the project area regarding the standard for big game security index as described in chapter 2. This proposed amendment would not impact the hydrologic resource in a measurable way because managing road closures in the fall months, while decreasing traffic on those roads, would not remove those roads from the system, nor would it reduce the number of stream crossings associated with those roads. Simply changing the date of closure would not impact any of the measurement indicators associated with water quality or the hydrologic resource.

Implementing any action alternative would also require a programmatic plan amendment for the R1 and N1 management areas to allow continued use of trails in these areas. This is described in detail in chapter 2. The plan amendment is a programmatic action and does not authorize site-specific activities and therefore has no impact to the hydrologic resource. The routes affected by the programmatic amendment are existing routes and the impacts to the hydrologic resource, if any, have been analyzed in this report by the measurement indicators

For more details on compliance with the Forest Plan, see appendix A and for more details on compliance with other regulations and policy, see the Hydrology Report (Coleman 2014) in the project record.

Table 33. Comparison of the alternatives and the measurement indicators for watersheds containing sediment impaired streams

6th -HUC Watershed Name	Road miles to be decommissioned within 150 feet of streams		Number of stream crossings to be decommissioned and restored		Number of potential culverts to be removed, and stream crossings to be restored on storage roads		Modeled sediment delivery reduction for closed or partially closed roads (tons/year)		Miles of new route construction or reconstruction within 150-feet of a stream channel and new stream crossings		Number of miles of routes within 150 feet of streams added to the system via unclassified (UC) routes		Number of stream crossings added to the system via unclassified (UC) routes.	
Alternative	**2**	**3 & 4**	**2**	**3 & 4**	**2**	**3 & 4**	**2**	**3 & 4**	**2**	**3 & 4**	**2**	**3 & 4**	**2**	**3 & 4**
Arrastra Creek	0	0.1	0	1	4	3 (Alt 3) 4 (Alt 4)	0.08	0.08	0	0	0.1	0	1	0
Blackfoot River-Hardscrabble Creek	0	0.2	0	1	0	0	0	0	0	0	0.0	0	0	0
Blackfoot River-Little Moose Creek	0	2.2	0	7	3	0	0	0	0	0	0.0	0	0	0
Blackfoot River-Willow Creek	0	2.7	12	12	4	3	0.65	0.65	0	0	1.8	0	5	0
Buffalo Gulch	0	3.7	0	14 (Alt3) 13 (Alt4)	2	2	0	0	0	0	0.0	0	0	0
Humbug Creek	0	0.0	0	0	0	0	0.29	0.29	0	0	0.0	0	0	0
Jefferson Creek	0	0.0	0	0	0	0	0	0.06	0	0	0.4	0.4	2	2
Nevada Creek Headwaters	0	0.0	0	0	3	3 (Alt 3) 5 (Alt 4)	0	0	0	0	0.0	0	0	0
Poorman Creek	0	0.2	0	1	8	8	1.1	1.11	0	0	2.1	0 (Alt3) 0.7 (Alt4)	7	0 (Alt3) 2 (Alt4)
Ward Creek	0	0.0	0	0	0	0	0	0	0	0	0.0	0	0	0
Washington Creek	0	0.0	0	0	0	0	0	0	0	0	0.0	0	0	0
Totals	**0**	**9**	**12.0**	**36 - 35**	**24**	**19 - 22**	**2.12**	**2.19**	**0**	**0**	**4.4**	**0.4 - 1.1**	**15**	**2 - 4**

Table 34 highlights the water quality improvement measurement indicators by alternative. Implementation of alternative 4 would result in the greatest improvement to the hydrologic resource through the reduction of sediment in the travel planning area, when compared to alternatives 1, 2 or 3, and would go the furthest in meeting Forest Plan direction for watershed management and water quality.

Table 34. Summary table comparing alternatives

Comparison Value	Existing Condition (Total in Travel Planning Area)	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Road miles to be decommissioned within 150 feet of streams	180.6 miles of road within 150 feet of streams	0	3.2	33.8	35.5
Number of stream crossings to be decommissioned and restored	585 stream crossings	0	17	128	131
Number of potential culverts to be removed, and stream crossings to be restored on storage roads		0	82	49	49
Modeled sediment delivery reduction for closed or partially closed roads (tons/year)	285.4 tons/year	0	2.8	6	7.9
Miles of new route construction or reconstruction within 150-feet of a stream channel	NA	0	0.2	0.8	0.8
Number of new stream crossings to be constructed with new construction routes	NA	0	3	3	3
Number of miles of routes within 150 feet of streams added to the System via unclassified (UC) routes	15.8 miles of UC routes within 150 feet of streams	0	13.1	1.1	1.7
Number of stream crossings added to the System via unclassified (UC) routes.	53 stream crossings on UC routes	0	38	6	7

Aquatic Species and Habitat

Affected Environment

This section presents existing conditions and trends for aquatic resources within the Blackfoot travel planning area. Information is organized under subsections: fish populations, fish habitat, and western pearlshell mussel. The first discusses the status and distribution of fish populations inhabiting the Blackfoot travel planning area; this includes discussions about non-native and native fish populations. The second subsection provides an overview of fish habitat including land-use activities that influence trends in stream habitat conditions.

Regulatory Framework

Three government agencies share responsibility for managing aquatic resources. The US Fish and Wildlife Service is a regulatory agency for federally listed species that seeks to recover these species in conjunction with other agencies. The Montana Department of Fish, Wildlife and Parks (MFWP) have primary responsibility for managing fish populations. Management of fish and amphibian habitat on National Forest system lands is largely a Forest Service responsibility. All three agencies cooperate in research and monitoring efforts.

Sensitive species are administratively designated by the Regional Forester and managed under the authority of the National Forest Management Act. Sensitive species present in the planning area are westslope cutthroat trout and western pearlshell mussel. The Forest Service is required to protect their habitat and prevent population declines that would lead to listing under the Endangered Species Act (FSM 2670). The sensitive species analysis in this document is the biological evaluation as outlined in the requirements of FSM 2672.42.

In 1999, the Regional Forester signed the "Conservation Agreement and Management Plan for Westslope Cutthroat Trout in Montana"(MFWP 1999). This conservation agreement has five objectives, of which the first three are relevant to National Forest system lands. The MOU was updated in 2008 and the Forest is still committed to the objectives described. The first objective is to protect all genetically pure populations. The second objective is to protect all populations that are only slightly introgressed (90 percent pure). The third objective is to recover cutthroat trout in several large watersheds (at least 50 miles of habitat) across the state.

The US Fish and Wildlife Service listed bull trout (*Salvelinus confluentus*) as a threatened species, under the Endangered Species Act, in 1998. Critical habitat was designated in 2010 that included National Forest System lands on the Helena National Forest. Bull trout and Critical Habitat are known to be present in the Blackfoot River and its tributaries within the planning area. (table 35) Refer to the biological assessment filed with the Aquatics Report (Reif 2014) in the project file.

Bull Trout Conservation Strategy

The Bull Trout Conservation Strategy for Forest Service (FS) Lands in Western Montana (BTCS) (USDA Forest Service 2013) was created in response to ongoing bull trout population declines occurring on and near National Forests in Western Montana, despite efforts to improve habitat quality. The BTCS summarizes baseline habitat conditions for bull trout populations and identifies habitat remedies by priority for specific local population and across bull trout Core Areas of Western Montana. The BTCS was used in this document for preparing the existing condition information and will be used in the prioritization and implementation of road decommissioning, storage and maintenance projects from the Blackfoot Travel Plan Decision.

1976 National Forest Management Act

Under the National Forest Management Act of 1976 (NFMA), the Forest Service is charged with maintaining the viability of all existing native and desired non-native vertebrate species in a planning area (36 CFR 219.20). A forest plan must identify "management indicator species" (MIS) that serve as proxies for fulfilling this NFMA viability requirement. Westslope cutthroat trout is the MIS for fisheries on the Helena National Forest. The regulations impose a standard by requiring habitat objectives to be established for maintaining viability of MIS throughout a planning area.

Fish and Wildlife Conservation Act of 1980

It is the purpose of this act to provide (1) financial and technical assistance to the states for development and implementation of conservation plans and programs for nongame fish and wildlife; and (2) to encourage all federal agencies and departments to utilize their statutory and administrative authority, to the maximum extent practicable, to conserve and promote conservation of nongame fish and wildlife and their habitats.

Federal Clean Water Act

The goal of the Clean Water Act (CWA of 1972) is to "Restore and maintain the chemical, physical, and biological integrity of the Nation's waters." An anti-degradation requirement states: "Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected." U.S. Environmental Protection Agency regulations based on the Federal Clean Water Act require states to identify watercourses where beneficial uses, such as fish production, are impaired or threatened by human activity. These waterbodies become known as water quality limited segments (WQLS), which then become scheduled for Total Maximum Daily Load identification and development of water quality restoration plans.

Montana Surface Water Quality Standards

In the Administrative Rules of the Montana Water Quality Act (17.30.622(f) –17.30.624(f)), no increases are allowed above naturally occurring concentrations of sediment or suspended sediment, settable solids, oils or floating solids detrimental or injurious to public health, recreation, safety, welfare, livestock, wildlife, birds and fish. The goal is to protect designated beneficial uses and meet or exceed Montana surface water quality standards.

Helena National Forest Plan

Direction for fisheries management under the Helena National Forest Plan (USDA, Helena National Forest 1986) emphasizes "maintenance or enhancement" of cold-water habitat and water quality to meet the needs of fisheries, (Forest Plan pages II-1 and II-4). The general forest wide standard (pg. II-22) states: "Maintain quality water and habitat for fish by coordinating activities and by direct habitat improvement. "

Fisheries research and investigations focus on the pervasiveness of excessive sediment generated by human (anthropogenic) activities in mountain watersheds. The major threat to fish is to their reproductive success and loss of rearing habitat. The ultimate objective for fisheries management is to promote effective management of sediment inputs to streams to preserve biological productivity. Any instream work must provide maximum protection of spawning habitat and not impede upstream fish migration."

Especially pertinent to travel planning projects are the road standards; pages II-30, road management standards on pages II-30 and II-31, and road maintenance standards on page II-32, the Plan states, "Unacceptable damage to soils, watershed, fish, wildlife, or historical/archaeological sites will be mitigated by road restrictions or other road management actions as necessary. Forest specialists representing soils and watershed shall provide input to the road maintenance planning process to verify standards, identify rehabilitation needs, and designate roads that should be permanently closed for resource protection." Although no standards for sediment were established, the monitoring section of the Forest Plan called for evaluation of intra-gravel sediment from 30 stream sections annually to ensure spawning habitat quality is being maintained.

In riparian areas, page II-35 of the Forest Plan specifies, "wet meadows and wet areas are closed to OHV use. Construction of roads will avoid stream course encroachment and channelization, including the avoidance of all riparian areas except to cross them." In addition, the Plan states, "the Forest will provide for vegetative cover adjacent to streams to serve as a filter strip for sediment and maintain optimum water temperatures, as well as provide large debris for long-term instream fish cover and pooling." For stream crossings, Plan standards call for stream crossing structure design that allows free water flow and fish passage.

The Helena Forest Plan was amended on August 30, 1995 by the Inland Native Fish Strategy (INFISH) (USDA Forest Service 1995). This interim strategy was designed to provide additional protection for existing populations of native trout, outside the range of anadromous fish, on 22 national forests in the Pacific Northwest, Northern, and Intermountain Regions. Implementing this strategy was deemed necessary as these species were at risk due to habitat degradation, introduction of exotic species, loss of migratory forms and overfishing. As part of this strategy, the regional foresters designated a network of priority watersheds. Priority watersheds are drainages that still contain excellent habitat or assemblages of native fish, provide for metapopulation objectives, or are watersheds, which have excellent potential for restoration. On the Helena Forest priority drainages include Copper Creek/Landers Fork in the Blackfoot drainage. Besides priority drainages, a secondary tier of bull trout "Special Emphasis Watersheds" were established as a means of identifying a refugia network of streams that would assist in the protection and recovery of bull trout as specified under Additional Agency Commitments in the 1998 Biological Opinion for continued Land and Resource Management Plans (USDI 1998 page 24). On the Helena Forest "special emphasis watersheds" include Arrastra Creek, Beaver Creek, Moose Creek, Willow Creek, Poorman Creek, Hogum Creek, Alice Creek, and upper Nevada Creek in the Blackfoot drainage. INFISH buffer widths (Riparian Habitat Conservation Areas, RHCAs) vary by stream category as follows:

- Category 1 - Fish bearing streams, the RHCA width is 300 feet on either side of the stream or the 100-year floodplain whichever is greater.
- Category 2 - Perennial streams not supporting fish, the RHCA is 150 feet on either side of the stream.
- Category 3 - Lakes or wetlands greater than one acre, the RHCA is a minimum of 150 feet but can be larger and extend to the outer limits of riparian vegetation, the extent of seasonally saturated soil, the extent of highly unstable areas, or the distance equal to the height of one site-potential tree.
- Category 4 - The planning area is not within INFISH priority drainage, therefore, the following applies. For seasonally flowing or intermittent streams, wetlands less than 1 acre, landslides and landslide prone areas, the RHCA boundary is one-half site potential tree from the edges of the stream channel, wetland or landslide, landslide prone area or a 50-foot slope distance, whichever is greatest.

INFISH also established Riparian Management Objectives (RMOs) and Riparian Habitat Conservation Areas (RHCAs). RMOs are habitat parameters that describe good fish habitat. Where site-specific data is available, these RMOs can be adjusted to better describe local stream conditions. These RMOs for stream channel conditions provide the criteria against which attainment or progress toward attainment of riparian goals is measured. RHCAs are portions of watersheds where riparian dependent resources receive primary emphasis. The RHCAs are defined for four categories of stream or water bodies dependent on flow conditions and presence of fish. The RHCAs are areas within specific management activities are subject to standards and guidelines in INFISH in addition to existing standards and guidelines in the Helena Forest Plan. Especially pertinent to this travel plan project are the INFISH standards required for roads; specifically standards for road management RF-2 (c3, c4, c5, c6, and c7 as well as RF-2d) and RF-3; especially RF3c. These standards are in addition to and reinforce Forestwide standards discussed for road related activities on pages II-30 to II-32 of the Helena Forest Plan to help ensure risk to native fishes are minimized.

Forest Service Manual

The Forest Service Manual (FSM) contains legal authorities, policies, instructions and guidance needed in the proper management of aquatic resources. Where other resource activities have potential to impact fish habitat, FSM 2634 provides for integrating prescriptions during project planning to help meet fisheries habitat objectives and to mitigate adverse impacts of resource management activities. After a half-century of rigorous research, fine sediment originating from a broad array of human activities has been singled out as the principal factor in the degradation of stream fisheries (Waters 1995, pg. 79). Water quality management shall recognize sediment as the major non-point pollutant from National Forest System lands and establish guidelines and procedures for preventing unacceptable resource impacts from introduced sediment (FSM 2542.02).

Federal Permits, Licenses, or Other Entitlements

All required permits would be obtained prior to project implementation. Potentially required permits include CWA section 404 permit, the Montana Stream Protection Act (SPA) 124 permit as well as the Montana Department of Environmental Quality 318 (turbidity) permit.

Fish Populations

Salmonid fishes are the predominant species present in streams in the Helena National Forest within the planning area. Table 35 displays fish species present in various 6th hydrologic unit codes (HUCs)[1].

Numerous fish, both native and nonnative species, are present within the analysis area. Native fish include westslope cutthroat trout (WCT), bull trout, mountain whitefish, suckers, and several sculpin species (Cottus). Bull trout are limited to drainages west of the Continental Divide on the Helena National Forest. Bull Trout are listed as a “threatened species” under the Endangered Species Act and westslope cutthroat trout are considered a “sensitive species” by the Northern Region of the U.S. Forest Service and a management indicator species in the Helena National Forest Plan (USDA Forest Service 1986). Additionally, there are a number of westslope cutthroat trout populations in the analysis area that have been identified as conservation populations by the Montana Department of Fish Wildlife and Parks.

Nonnative brook trout, rainbow trout, and brown trout, are present in many streams throughout the Blackfoot travel planning area, sometimes in conjunction with native species. Of the nonnative

[1] Fish presence and distribution for individual streams is available on fishery maps in Helena Forest Fishery Files, Blackfoot Section 7 Bull Trout Watershed Baseline (USDA Forest Service 2010), and in updates based on various past Helena National Forest project-specific consultation documents with the U.S. Fish and Wildlife Service.

salmonids, brook trout are much more prevalent than rainbow or brown trout in streams on National Forest System land.

Table 35. Salmonid species present and sediment rating in various 6th field HUCs throughout the planning area**

HUC 6 ID	HUC 6 Name (see figure 6)	Sediment habitat Indicator Rating**	Salmonid Species Known to be Present
170102030309	Arrastra Creek	Functioning at risk- 34% in the North Fork Arrastra, and 30% on middle Arrastra	Westslope cutthroat trout, brown trout, brook trout, bull trout
170102030303	Beaver Creek	Functioning at Risk- 27% fines in Beaver Creek 31% Stonewall, 34% Klondike Cr, Theodore -32%	Westslope cutthroat trout, brown trout, brook trout, whitefish, bull trout
170102030202	Blackfoot River-Anaconda Creek	Functioning at Unacceptable Risk	Westslope cutthroat trout, brook trout
170102030206	Blackfoot River-Hardscrabble Creek	Functioning at Risk	Brook trout
170102030308	Blackfoot River-Lincoln	Functioning at Unacceptable Risk	Brook trout
170102030310	Blackfoot River-Little Moose Creek	Functioning at Risk- 44% Moose Creek, 54% Little Blackfoot 34% in the Blackfoot River	Westslope cutthroat trout, brown trout, brook trout, whitefish, bull trout
170102030201	Blackfoot River-Willow Creek	Functioning at Unacceptable Risk. Willow 31% Sanbar 35%	Westslope cutthroat trout, brown trout, brook trout,
170102030103	Copper Creek	Functioning at Risk. Sediment averaging between 24% and 35% between 1986 and 2005	Westslope cutthroat trout, bull trout
170102030205	Hogum Creek	Functioning at Risk. Sediment averages varying between 24 and 39% from 1986 to 2005. Hogum Cr- 31% to 35% averages between 1988 and 2005	Westslope cutthroat trout, brown trout, brook trout, bull trout, whitefish
170102030301	Hamburg Creek	Functioning at Risk- 28% fines	Westslope cutthroat trout
170102030304	Keep Cool Creek	Functioning at Unacceptable Risk- Keep Cool 47%, Liverpool 43%, Park Creek 45%,	Westslope cutthroat trout, brook trout
170102030305	Lincoln Creek	Functioning at Unacceptable Risk	Brook trout
170102030204	Lower Alice Creek	Functioning at Unacceptable Risk. Alice 31%, Barlot 43%, Toms Gulch 30%	Westslope cutthroat trout, brown trout, brook trout, whitefish
170102030104	Lower Landers Fork	Functioning at Risk. 37% Seven Up Pete, 29% Landers (Lower)	Westslope cutthroat trout, brown trout, brook trout, whitefish, bull trout
170102030102	Middle Landers Fork	Functioning at Risk	Westslope cutthroat trout, brown trout, brook trout, bull trout whitefish
170102030302	Poorman Creek	Functioning at Risk. Sediment averages varying between 24 and 39% from 1986 to 2005.	Westslope cutthroat trout, brown trout, brook trout, bull trout, whitefish

HUC 6 ID	HUC 6 Name (see figure 6)	Sediment habitat Indicator Rating**	Salmonid Species Known to be Present
170102030307	Sauerkraut Creek	Functioning Appropriately- fine sediment average of 19%	Westslope cutthroat trout, brook trout, bull trout
170102030203	Upper Alice Creek	Functioning at Unacceptable Risk	Westslope cutthroat trout, brook trout
170102030306	Willow Creek	Functioning at Unacceptable Risk—35% in the East Fk of Willow and 37% in the West Fk of Willow Cr	Westslope cutthroat trout, brook trout
170102030703	Rock Creek	Functioning at Unacceptable Risk	Westslope cutthroat trout, brook trout
170102030704	Ward Creek	Functioning at unacceptable risk	Brook trout
170102030405	Buffalo Gulch	Functioning at unacceptable risk. Clear Creek-44%, Buffalo 26%, Sheldon Cr- 43%	Westslope cutthroat trout, brown trout, brook trout, rainbow trout
170102030404	Jefferson Creek	Functioning at unacceptable risk. 29% Madison Cr, and 47% in Jefferson Creek	Westslope cutthroat trout,, brook trout,
170102030415	Lower Nevada Creek	Functioning at unacceptable risk. Wasson Creek at 36%	Bull trout, WCT, brown trout, brook trout, whitefish
170102030407	Middle Nevada Creek	Functioning at unacceptable risk. Deer Cr 30%, Chicken Creek 32%, Wilson Creek 28%, and Chimney Creek 47%	Westslope cutthroat trout, brown trout, brook trout, whitefish
170102030401	Nevada Creek Headwaters	Functioning at unacceptable risk. Clear Creek-44%, Buffalo 26%, Sheldon Cr- 43%	Westslope cutthroat trout, brown trout, brook trout, rainbow trout
170102030403	Washington Creek	Functioning at unacceptable risk lower reaches of Washington with 34%	Westslope cutthroat trout, brook trout
100301020201	Green Creek	Functioning at Risk based on visual estimates	Rainbow and brook trout
100301020203	Middle Fork Dearborn River	Functioning at Risk based on visual estimates	Rainbow and brook trout
100301020401	Upper South Fork Dearborn River	Functioning at Risk based on visual estimates	Rainbow and brook trout
100301011803	Little Prickle Pear Creek-Marsh Creek	High sediment measured at over 40% in Marsh Creek Functioning at Unacceptable Risk. Little Prickly Pear Cr -34%	Extensively hybridized westslope cutthroat trout, brook trout, brown trout, rainbow trout
100301011807	Lower Canyon Creek	Functioning at Unacceptable Risk. Canyon Creek- 42%	Westslope cutthroat trout, brook trout, rainbow trout, brown trout
100301011805	Upper Canyon Creek	Functioning at Unacceptable Risk. Trout 42%, Rooster Bill 26%	Westslope cutthroat trout, brook trout, rainbow trout
100301011804	Virginia Creek	Functioning at Unacceptable Risk. Trout 42%, Rooster Bill 26%	Westslope cutthroat trout, brook trout, rainbow trout

**(FA= Functioning appropriately, FAR= Functioning at Risk, and FUR= Functioning at Unacceptable Risk). Includes percent of fine sediment less than ¼ inch in spawning gravels. Sediment ratings are described in FWS Matrix of Diagnostic Indicators and

Pathways (USDI 1998). Ratings assigned to 6th code HUCs were derived from field observations and sometimes quantitatively measured levels of sediment in stream substrates. The ratings in the table below above for streams in the Columbia River Basin are from the watershed baselines (USDA 2000a and USDA 2000b). Note: not all species are present in every stream within a specific 6th code.

Native species under the category of "threatened, endangered, or sensitive" (TES) species status include westslope cutthroat trout (WCT) and bull trout. In addition, an invertebrate species, western pearlshell mussel has also been added to the U.S. Forest Service Northern Region list of aquatic sensitive species. Further discussion about sensitive WCT and listed bull trout including the western pearlshell mussel follows under separate sections addressing each species.

Westslope Cutthroat Trout (Oncorhynchus clarki lewisi) – Forest Service Sensitive

Status Overview

Westslope cutthroat trout is Montana's state fish and one of several distinct interior subspecies of cutthroat trout (Behnke 1992, pp. 2-5). Currently westslope cutthroat trout are referred to as a Species of Concern by the State of Montana, a Special Status Species by the Bureau of Land Management (BLM), and a Sensitive Species by the Northern Region of the Forest Service. On the Helena National Forest, westslope cutthroat trout have been identified as the fish "management indicator species." Factors associated with declines in WCT that lead up to these special categories include introductions of non-native fish, habitat loss or degradation, and over-exploitation (Hanzel 1959, Liknes and Graham 1988, Behnke 1992, McIntyre and Rieman 1995).

In May 1997, the Fish and Wildlife Service was petitioned to list westslope cutthroat trout as "threatened" under the Endangered Species Act. In 2000, several environmental groups brought suit to compel the Fish and Wildlife Service to issue its final determination to the species' listing. After the Fish and Wildlife Service determined listing WCT was "not warranted" at that time, plaintiffs later filed suit claiming the Fish and Wildlife Service failed to reconcile its recognition of hybridization as a threat to WCT viability. Subsequently, the FWS initiated a new comprehensive status review for WCT in 2002 and determined, based on best scientific information available, that introgressed WCT with less than 20 percent of their genes derived from another taxon would still conform morphologically to the taxonomic description of WCT. After considering evidence supporting its morphology-based approach to classifying WCT populations (including wide WCT distribution, habitat available on public lands, and state and federal conservation efforts underway), the District Court for the District of Columbia in its Memorandum Opinion concluded in March, 2007 in favor of the Reconsidered Listing Determination from the Fish and Wildlife Service that westslope cutthroat trout is not warranted for listing at this time.

The WCT status assessment by Shepard et al. (2003) estimates that of the 39 percent of historical habitat WCT currently occupy in Montana, the decline of the WCT subspecies is most pronounced east of the Continental Divide. East of the Divide, genetically pure WCT populations occupy less than 5 percent of their historical habitat (Shepard et al. 2003, pp. 87-90), and most of those populations have been restricted to headwater streams primarily above barriers. Consistent with this figure for WCT east of the Divide, WCT in the Upper Missouri sub-basin side of the Continental Divide travel area account for only 5.5 percent of the fish bearing habitat. These isolated resident WCT populations (isolates) are considered extremely important to the conservation and restoration of WCT in Montana.

Management and conservation actions undertaken on behalf of WCT in Montana include: more restrictive fishing regulations; accelerated WCT surveys and inventories; non-lethal genetic testing protocols; development of captive brood stocks for stocking/recovery programs; education programs;

and stepped-up compliance with water and habitat protection laws, policies and guidelines; non-native species removals; and habitat improvement. These efforts culminated in a formalized Montana memorandum of understanding (MOU) and conservation agreement for WCT (MFWP 1999) co-signed by nine government agencies and conservation groups including the U.S. Forest Service and Bureau of Land Management. That initial MOU/Conservation Agreement was a five-year agreement, which expired in 2005, and has been superseded by the 2007 MOU/Conservation Agreement (MFWP 2007) to expedite conservation measures for WCT and Yellowstone cutthroat trout throughout their respective historical ranges in Montana.

One outcome of the latest WCT status review and MOU/Conservation Agreement is the designation of three categories of cutthroat trout populations:

- ***Core populations*** – Cutthroat populations having no evidence of hybridization (i.e. genetically pure) that can serve as donors for restoration efforts.
- ***Conservation populations*** – *Populations* that include all the “core” populations as described above *plus* those that have unique ecological and behavioral traits of the subspecies. Introgressed conservation populations will typically be less than 10 percent introgressed.
- ***Sportfish populations*** – Wild or hatchery-sustained cutthroat populations that are managed especially for the benefit of recreational fisheries. Some wild sportfish populations may have conservation value.

Distribution

All *conservation* populations of WCT merit additional management emphasis on preserving them (Shepard et al. 2003 p. 8). Conservation coordination focuses on *species* management with the Montana Fish Wildlife and Parks (MFWP) as the lead agency, and *habitat* management on NFS/BLM lands with land management agencies taking lead responsibility. Regional/sub-basin scale conservation plans developed by MFWP in cooperation with land management agencies will identify management needs of WCT conservation populations required to accomplish the conservation and restoration objectives outlined in the 2007 WCT MOU/Conservation Agreement across each 4th field HUC or sub-basin.

Within the planning area, WCT are found in the Blackfoot River and portions of the Upper Missouri River 4th code hydrologic unit. The Upper Missouri HUCs include: the Middle and South Fork of the Dearborn, North and South Forks of Little Prickly Pear Creek, Marsh and North Marsh Creek drainages, Virginia Creek drainage, and the Canyon Creek drainage (table 35).

Distribution of westslope cutthroat trout within these 4th code hydrologic units extends into a number of streams on the Helena National Forest with many more streams supporting WCT west of the Continental Divide than east of the Divide. Although the Dearborn River supports WCT in its headwaters on the Lewis and Clark Forest, there are no known WCT on Helena Forest streams within the Dearborn 4th field HUC. The WCT distribution information is detailed on 4th field hydrologic unit maps available through the Helena Forest Supervisors Office Fishery Files and the Montana Department of Fish, Wildlife, and Parks. Many of the streams on the Helena Forest that support WCT, are small with many young-of-the-year and yearling WCT found in streams less than 18 inches in width.

Habitat Relations

Waters inhabited by WCT generally are cold and nutrient poor. Growth varies widely, but is probably strongly influenced by habitat productivity. Generally growth is higher for migrant forms that spend some period of time in larger rivers (fluvial) or lakes (adfluvial). Although WCT can be found throughout large river basins spawning and early rearing generally occurs in headwater streams. Spawning habitat has been characterized as gravel substrates ranging in size from 2mm to 75mm, mean water depths ranging from 17cm to 20cm, and mean velocities of 0.3 to 0.4 m/sec.

Substrate composition is believed to strongly influence survival. Highly embedded substrates may be particularly harmful to juveniles that typically over-winter between spaces in stream cobbles and rubble. Evidence for the negative influence of fine sediment is widespread and, in general, increased sediment in substrates must be viewed as an increased risk for any WCT population.

Westslope cutthroat trout micro-habitats are associated with velocities ranging 0.1 to 0.3 m/s. WCT less than 100mm in length are generally found in pools and runs while larger cutthroat trout are found in pools. Generally stream reaches with numerous pools support the highest densities of fish. Habitats that provide some form of cover also seem to be preferred. In winter, small fish tend to use areas where cover is provided by the interstitial spaces in the stream substrates. Larger fish congregate in pools during the winter.

The Aquatic Species and Habitat Report (Rief 2014) in the project record provides more detailed information on this species, including general life history characteristics and biotic interactions.

Bull Trout (Salvelinus confluentus) - Threatened

Status Overview

On June 10, 1998, bull trout were listed as a “Threatened Species” within the Columbia River Basin by the United States Fish and Wildlife Service (USFWS). Section 7(a) (2) of the Endangered Species Act (ESA) of 1973, as amended, requires all federal agencies to review actions authorized, funded, or carried out by them to ensure such actions do not jeopardize the continued existence of listed species.

The distribution of bull trout is limited to drainages west of the Continental Divide on the Helena National Forest with the strongest populations present in the Blackfoot River drainage. Table 35 above shows the 6th field HUCs with the streams known to support bull trout.

Under INFISH (USDA Forest Service 1995) priority drainages for bull trout were established. On the Helena National Forest, priority drainages include Copper Creek/Landers Fork in the Blackfoot drainage. Besides priority drainages, a secondary tier of bull trout “Special Emphasis Watersheds” were established as a means of identifying a refugia network of streams that would assist in the protection and recovery of bull trout as specified under Additional Agency Commitments in the 1998 Biological Opinion for continued Land and Resource Management Plans (USDI Fish and Wildlife Service 1998 p. 24). On the Helena National Forest “special emphasis watersheds” include Arrastra Creek, Beaver Creek, Moose Creek, Willow Creek, Poorman Creek, Hogum Creek, Alice Creek, and upper Nevada Creek in the Blackfoot drainage.

In the 2010 Final Rule on Bull Trout Critical Habitat, the USFWS classified the Blackfoot River, and its tributaries, Poorman Creek, and Copper Creek as bull trout critical habitat.

A Draft Bull Trout Recovery Plan, completed in 2005, has not yet been finalized, as well as, the U.S. Forest Service’s Draft Bull Trout Conservation Strategy. Under the Draft Bull Trout Recovery Plan, bull trout within various drainages are organized by “core populations” with local populations included within those core populations. The following section discusses the core and local populations pertinent to the Blackfoot travel planning area. Much of the information on the core populations below is based on local biologists’ knowledge and familiarity with local conditions.

The Conservation Strategy for Bull Trout on USFS Lands in Western Montana (USDA Forest Service 2013) is intended to support the draft USFWS Bull Trout Recovery Plan for the Montana portion of the proposed Columbia Headwaters Recovery Unit- a unit that includes all of western Montana's bull trout waters west of the Continental Divide and portions of northern Idaho (Coeur d'Alene, Pend Oreille and Priest). The BTCS helps clarify bull trout conservation needs by identifying the most important areas and treatments that are expected to provide the greatest benefit to bull trout on FS lands. Recommended actions in the BTCS are expected to improve habitat conditions that contribute to bull trout conservation and recovery within the Columbia Headwaters Recovery Unit.

Bull trout in the Blackfoot River are included as a core population in the Draft Bull Trout Recovery Plan (2005). There are several local populations identified within the Blackfoot Core Bull Trout Population; including the North Fork of the Blackfoot River, Monture Creek, Landers Fork/Copper Creek, Cottonwood Creek, Belmont Creek, and Gold Creeks. There are a number of other streams throughout the project area on the Helena Forest that are known to support bull trout, but are not identified as local populations in the Draft Recovery Plan. Examples include, but are not limited to Beaver Creek, Arrastra Creek, Poorman Creek, South Fork Poorman Creek, Sauerkraut Creek, Dry Creek, and Nevada Creek. Of these watersheds, Poorman Creek, Arrastra Creek, Beaver Creek, and the upper reaches of Nevada Creek on the Forest were identified as "Special Emphasis Watersheds" as required by USDA and USDI 1999. Having these emphasis watersheds was an additional means of identifying a refugia network of streams to assist in the protection and recovery of bull trout and identified under additional agency commitments in the 1998 Biological Opinion (USDI 1998 page 24).

A biological assessment that discusses effects to bull trout and critical habitat has been prepared and filed with the Aquatic Habitat and Species Report (Rief 2014) in the project file. Consultation with the United States Fish and Wildlife Service on the predicted impacts of this project on bull trout is currently underway, based on the information provided in the biological assessment.

Distribution

Based on redd counts and limited electro-fishing efforts, it is likely there are somewhere between 400 to 500 adult bull trout between the 6 local populations. Additional adult bull trout are in numerous other streams throughout the core population area, and in some of the designated INFISH Priority Watersheds and Special Emphasis Watersheds, as well as, in undesignated streams. The overall number of bull trout adults included in all streams throughout the Blackfoot drainage is probably less than 800 when combined with the adults in the local populations. Recent redd surveys suggest that four of the five Local Populations are declining somewhat while the Copper/Landers population is improving (USDA Forest Service 2010).

General Habitat Requirements for Bull Trout

Bull trout may suffer from some competition with brown trout and predation in the main stem Blackfoot River although there is no field documentation of this hypothesis. Both species occupy some of the same habitat and eat some of the same foods and both species are highly piscivorous. Consequently, the hypothesis seems reasonable. With temperatures rising in the main stem Blackfoot River, based on information collected by FWP over the last 10 years (Pierce et al. 2008, pp. 32 and 33), brown trout may be gaining some competitive edge over bull trout.

Interactions of bull trout with brook trout occur mostly in tributary streams rather than the main stem Blackfoot River. Brook trout are present in some of the local bull trout populations and many of the other streams in the Blackfoot River drainage so there is some additional threat of decreased bull trout production due to hybridization.

The Aquatic Habitat and Species Report (Rief 2014) in the project record provides more detailed information on this species, including more detail about habitat requirements.

Western Pearlshell Mussel (Margaritifera falcata) – Forest Service Sensitive

Status Overview

The Western pearlshell mussel has been listed as a Tier I invertebrate species of greatest conservation need during completion of the 2005 Montana Comprehensive Fish and Wildlife Conservation Strategy. Subsequently, the Montana Natural Heritage Program launched a comprehensive survey plan in 2007 to determine the distribution and population viability of all three mussel species native to Montana, including the western pearlshell mussel. A report documenting populations of these freshwater mussels was completed in 2010 by Stagliano (2010). Information in this segment is based primarily on findings from Stagliano (2010) including information online from the Montana Natural Heritage Program site and the 2005 Comprehensive Fish and Wildlife Conservation Strategy.

The western pearlshell mussel was added to Montana's Species of Concern (S2) list in 2008 due to declining and/or very limited numbers, range, and/or habitat, making it vulnerable to extirpation in Montana. Mussel beds previously reported in larger rivers (Blackfoot, Big Hole, and Clark Fork River) are extirpated or at such low densities that long-term viability is questionable. Surrounding states listed it as state-threatened or unranked, and declining in Wyoming, Idaho, and Oregon (NatureServe 2005, online at http://www.natureserve.org/explorer).

Distribution

The Montana Natural Heritage database contains no records for this species in the planning area, although they have been found in the Blackfoot River downstream of the planning area. Habitats suitable for mussels are present in the planning area where Westslope cutthroat trout are present .Based on this information; we believe pearlshell mussels may exist in the analysis area.

Western pearlshell mussels are one of five freshwater mussels of the family Margaritiferidae in North America. Their range is reported in Pacific drainages from California to southern Alaska. In Montana, the western pearlshell is the only freshwater mussel found in cold water trout streams west of the Continental Divide and east of the Divide in headwater streams of the Missouri River basin (MFWP 2005).

For areas in and around the Helena National Forest, the latest surveys by Stagliano (2010) found six of western pearlshell mussel occurrences in the Blackfoot drainage; four in the Smith River; three in the Boulder River; and one each in Deep Creek and Dry Creek of the Big Belts range.

The Aquatic Species and Habitat Report (Rief 2014) in the project record provides more detailed information on this species, including more detail about habitat requirements and distribution.

Habitat Relations

Threats to western pearlshell mussel populations include extensive damming, diversions, hydroelectric, and other water supply projects that have substantially reduced the range of this species. Agricultural runoff (eutrophication), unstable substrate, and siltation have also been cited as major problems to the species (Western Pearlshell – MT Field Guide, online at http://fieldguide.mt.gov/detail_IMBIV27020.aspx. This species has been added to the Sensitive Species list by USFS Northern Region (R1) due to the ongoing disruptions of western pearlshell habitats and the most recent delineation of the species viability in Montana (Stagliano 2010).

Fisheries Habitats

Existing fisheries habitat conditions throughout areas west of the Continental Divide and within the analysis area have been described in the following document: The Watershed Baseline Condition for the Blackfoot River Section 7 Watershed (USDA 2000). As discussed in the Information Used portion of this document, the baseline and updates to the baseline are assumed to depict the effects of past and ongoing activities. The habitat element related to fisheries assumed to be most at risk to be affected (via the travel planning decision) is the sediment habitat indicator. It is commonly accepted among fishery professionals that elevated sediment levels in stream substrates can have negative effects to salmonid fishes. Consequently stream sediment is used as an overall means to estimate effects to fisheries for this project. The rating for sediment in each 6th code HUC is depicted in table 35 above. Other aspects of existing fish habitat conditions throughout drainages east of the Continental Divide and within the project analysis area are available in the fishery files with Helena National Forest fishery personnel. In general, many of the streams have been substantially impacted by a variety of human related activities, and habitats are substantially less than what would be considered optimum for salmonids. As shown in table 35, sediment levels are judged to be functioning at risk or unacceptable risk for all the streams east of the Continental Divide in the planning area.

Trout habitat is essentially the product of interactions among underlying geologies, soils, topography, vegetation, climate, and hydrology, unique to the area's watersheds (Meehan 1991, p.5; Swanston 1991, p. 139). These drainage characteristics and processes remain fairly constant setting up conditions for optimum production of aquatic life forms (Meehan 1991, p.5). When natural disturbance reshapes stream channels, the actual effects on aquatic organisms are often short-lived. In their natural context, accessory processes like fire, flood flows, insect infestations, disease, wind throw, and animal activities (e.g. beaver) operate on the stream system to produce improved habitat quality and productivity in the long term (Swanston 1991, pp. 139-142).

Human land-use activities can disrupt the delicate balance of these interactions producing persistent changes in habitat that can reduce natural fish production and population viability (Meehan 1991, pp. 1-6; Waters 1995, pp. 1, 17). The Blackfoot travel planning area traditionally has been managed for non-fishery resources. These include timber harvest, mining, livestock grazing, forest transportation and recreation. Other human activities that affected fish habitat included beaver removal, irrigation withdrawals, development activities on private inholdings, and utility corridors.

Cumulatively, these activities impair natural stream functions to varying degrees in the analysis area by accelerating erosion and sedimentation, altering surface flows, reducing vegetation cover, and destabilizing or degrading stream channels. In general, any ground disturbing activity has potential to increase erosion and exacerbate excess sediment delivery within a watershed, in turn lowering the natural fish production capabilities (carrying capacity) of streams (Hicks et al. 1991). Hence, excessive sediment delivery that persists beyond natural background levels becomes the common denominator of various land-use activities affecting fish habitat (Meehan 1991).

Forest roads have been tagged as producing the majority of excess sediment amongst forest activities and management practices (Anderson 1971, Anderson et al. 1976, Cederholm et al. 1981, Furniss et al. 1991, Waters 1995) followed by past mining disturbance and streambank destabilization and degradation in active grazing allotments. The degree which road construction and maintenance has on altering sediment production in a watershed varies substantially and is not possible to quantify accurately. In general, the magnitude and risk for sediment delivery from roads, including other land use activities, is a function of the amount of surface disturbance (acres disturbed) and proximity to streams within a given sub-watershed. The specific effects on trout and trout habitat from excessive erosion and sedimentation are discussed in more detail under the Environmental Consequences section.

The road-fisheries relationship extends beyond the risk of chronic excess sedimentation. A second risk element is road proximity to streams. When roads are constructed adjacent to a stream they constrain the channel resulting in a stream limited in its ability to access its historic floodplain and often result in the removal of riparian vegetation to accommodate the road right-of-way. Such roads change the physical attributes of trout habitat by reducing pools, meanders, undercut banks, streamside vegetation/shading, large woody debris recruitment, and result in higher energy gradients all rendering the stream less productive for fisheries.

Stream crossings represent a third road risk factor to fish habitat and fish populations. Roads that cross streams most frequently rely on culverts that often disrupt upstream fish migration. This limits a fish population's access to habitat types needed to fulfill their life stage requirements for spawning, rearing, feeding, over-wintering, security and escapement. Additionally, stream crossings, particularly culverts, can result in chronic sedimentation impacts during typical water years and catastrophic effects when floods trigger crossing failure (USDA Forest Service 1998, p. 2). Ford crossings, especially unimproved fords, directly alter the bed and banks of fish habitat and act as chronic sources of sediment. Ford crossings located in or near spawning and nursery areas are particularly risky to sensitive incubating salmonid embryos and fry due to direct vehicular disturbance to the streambed and banks, and traffic generally causes the streambanks to widen as the banks break down and wash away (Clarkin et al. 2006. p. 5-1).

Environmental Consequences

Methodology

This report follows procedures outlined in Report FS-683, Roads Analysis: Informing Decisions about the National Forest Transportation System (USDA Forest Service 1999) customized to local situations. The effects section takes the broad-scale forestwide roads analysis down to the finer sub-watershed scale (6^{th} field hydrologic unit code) specific to the Blackfoot travel planning area.

Forest roads can contribute to increased soil erosion, increased sediment delivery and peak flows that could impact water quality and aquatic habitat, especially if road densities in a watershed are high. These effects would vary depending on the location of a road on the landscape (sloped or flat ground), their proximity to streams or drainages, and timing of precipitation events.

To address the proposed road and trail changes on sediment and changes in road stream relationship that may affect fisheries and other aquatic species habitat, indicators were used as follows:

Measurement Indicators:

- ♦ Road sediment reduction estimates resulting from road storage or decommissioning in tons per year
- ♦ Miles of road or trail reclaimed in the INFISH buffer along streams (riparian habitat conservation areas)
- ♦ Number of road stream crossings and relationship to fish bearing streams
- ♦ Miles of high/moderate risk roads and relationship to fish bearing watersheds. Means used to assess risk of various road segments posed to fish was completed in the Helena National Forest Roads Analysis Report (USDA Forest Service 2004, pp. 231-232).

- ♦ Consistency of alternatives with Forest Plan guidance for threatened, endangered and sensitive fish and aquatic species

GIS road and stream coverage helped to estimate the number of stream-road intersections and high risk roads as related to INFISH buffers. Field data from road sediment inventories and culvert inventories/assessments were completed in 2012 by experienced HNF hydrologic technicians and field-validated by the forest hydrologist. Data collected in the road sediment survey were of a degree of precision and accuracy that exceeded the sensitivity of the sediment modeling software.

Streams delineated on topographic maps may, however, under-represent actual streams; conversely crenulated contour coverage may over-represent streams depending on the rules applied and individual crenulator (USDA Forest Service 1999, pp. 140 and 180). The accuracy of the indicators in this analysis is probably moderate at best. Past travel plan analyses found that comparing GIS based stream-route intersections with actual on-the-ground measurements amongst four arterial routes within the North Belts Travel Plan area indicated the GIS coverage over-represent this indicator on average about 30 percent. Conversely, field checking stream-road intersections for the Cabin Gulch Vegetation Treatment project found that GIS-based stream-road intersections were under-represented up to 45 percent of the actual number of intersections in East Cabin Gulch, yet GIS coverage over-represented this indicator 21 percent in the North Fork Deep Creek. Therefore, this analysis more appropriately gives a reasonable measure of relative differences between the alternatives.

Assumptions

Although forest management activities may differ widely, they impact streams principally in the following ways:

- ♦ Increased sedimentation, from a variety of activities, into trout spawning and rearing habitat; including a substantial contribution due to location and use of existing roads
- ♦ Alterations of channel morphology that increase slope and energy, reduce pool habitat, reduce cover, destabilize banks, and disconnect floodplains from active channels.
- ♦ Loss of habitat connectivity that limits fish migration over their life cycles (includes culverts associated with roads)

By far, roads produce the most sediment generated amongst forest activities, particularly if located near streams (Anderson 1971, Anderson et al. 1976, Cederholm et al. 1981, Furniss et al. 1991, Waters 1995). Alterations in channel morphology also can result wherever roads are built parallel to streams and at flow restrictions such as culverts that commonly end up being fish migration barriers (Furniss et al. 1991). Ford crossings also present their own risks since they provide a direct linkage of the road to surface water where vehicles directly drive through the channel. In such cases traffic generally causes the stream to widen and can direct kill fish larvae or fry it located in or close to sensitive spawning and rearing areas.

This analysis draws upon the following assumptions:

- The primary effect to salmonid fish and habitat is associated with sediment delivery from high risk roads and the presence of stream-route intersections.
- Sediment delivery and deposition in stream channels is an important source of mortality to trout. Other variables (dissolved oxygen, food, cover, and angler harvest) are outside the scope of this analysis.

- Critical channel reaches (core sampling reaches) within a watershed can be used to estimate sediment effects on the entire stream.
- The act of closing a road to all but administrative use without action to stabilize the road (e.g., culvert removal, soil de-compaction, seeding) may not result in watershed improvement. The act of closing a road to all motorized use, removing culverts, de-compacting soil and seeding would result in watershed improvement.
- Any routes designated as 01-STO: Closed or Seasonal Roads change to Storage, 01-RES-STO: Closed Roads change to Storage or DECOM: Decommission would be decommissioned or stored appropriately based on field surveys.
- Any road segment that is currently a source of sediment and is designated for obliteration would no longer be a source of sediment following obliteration.
- Road maintenance (blading, culvert-clearing) and improvements (surfacing, culvert replacement) may result in temporary increases in sediment delivery to streams, but would result in a long-term (3-5+ year) reduction in sediment delivery from planning area roads.
- The decision is unlikely to result in measurable changes in water yield in any watershed given the relatively small area proposed for restoration and for new routes
- Approximately 20-30 miles of new non-motorized trail construction would be a narrow trail, designed only for non-motorized use. Some of these routes fall on state and private land.
- Sediment delivery can be reduced to varying degrees through improved road drainage improvements for road segments identified as high risk for negatively affecting bull trout.

For the watershed baselines cited in the “Information Used” section of this report, the habitat indicators are assumed to be adequate to describe existing habitat conditions for bull trout, westslope cutthroat trout, other salmonid species, as well as other fish species. These are baseline conditions for streams west of the Continental Divide. The conditions detailed in those baselines are present as a function of all past and ongoing activities, including the ongoing existing winter travel activities in this project analysis area.

Information Used

Information on the status of fish habitat and populations in the Blackfoot travel planning area was drawn from a variety of sources including: sediment and riparian monitoring data, fish habitat condition surveys, fish species and distribution surveys, road sediment inventories, the Forest Roads Analysis (USDA Forest Service 2004), watershed and fisheries risk assessments of roads to fish in the Roads Analysis (2004), culvert inventories/ assessments, previous biological assessments and evaluations, and previous biological opinions.

Substantial portions of the resource information were collected by U.S. Forest Service fisheries personnel over the past 15-20 years. Additionally, there is a substantial pool of information (especially in the Blackfoot River drainage) that has been collected by a variety of state and federal agencies and private individuals. Pertinent information on fish species composition, distribution and abundance, and habitat condition, from various agencies such as MFWP, as well as, the Montana Department of Environmental Quality is used when available.

For streams in the Blackfoot River drainage, a “baseline” for areas within the proposed planning area is included in the Watershed Baseline for the Blackfoot River Bull Trout Section 7 Watershed (USDA Forest Service 2010) and the Conservation Strategy for Bull Trout on USFS Lands in Western Montana (USDA Forest Service 2013). There have been updates to those various watershed documents that were submitted to the USFWS as various federal projects were proposed and those updates are also used.

Relevant to measures used to evaluate effects of roads on fisheries resources: GIS road and stream coverage helped to estimate the number of stream-road intersections and high risk roads as related to INFISH buffers. Field data from road sediment inventories and culvert inventories/assessments were completed in 2012 by experienced HNF hydrologic technicians and field-validated by the Forest hydrologist. Data collected in the road sediment survey were of a degree of precision and accuracy that exceeded the sensitivity of the sediment modeling software.

Spatial and Temporal Context for Effects Analysis

The analysis area includes numerous 6th code hydrologic units (HUCs) in the headwaters of the Blackfoot River portions of the following drainages in the Upper Missouri River 4th code hydrologic unit: the Middle and South Fork of the Dearborn, Canyon Creek, and Little Prickly Pear Creek (table 25).

As part of the Interior Columbia Basin Ecosystem Management Project analysis, the Blackfoot River watershed was divided into 6th field sub-watersheds or HUCs. These HUCs have been characterized in terms of natural processes, land use activities as well as, fisheries and habitat conditions as part of the Watershed Baseline Condition for the Blackfoot River Section 7 Watershed (USDA Forest Service 2000).

The Dearborn and the Upper Missouri River drainages have also been partitioned into 6th-field Hydrologic Units (HUCs) by the Natural Resource Conservation Service (NRCS). There are portions of two HUCs in the Dearborn; one in the Middle Fork, and one in the South Fork. These include: North and South Forks of Little Prickly Pear Creek, Marsh and North Marsh Creek drainages, Virginia Creek drainage, and the Canyon Creek drainage.

All alternatives include drainages where the proposed actions have potential to affect bull trout critical habitat and bull trout local populations identified in the Draft Bull Trout Recovery Plan. Additionally, all alternatives include habitats supporting conservation populations of westslope cutthroat trout. Discussion of westslope cutthroat trout conservation populations will be addressed further in this analysis in relation to the updated Memorandum of Understanding and Conservation Agreement for Westslope Cutthroat Trout and Yellowstone Cutthroat Trout in Montana signed by various agencies and private groups (MFWP 2007).

Past, Present, and Foreseeable Activities Relevant to Cumulative Effects Analysis

Past, present and foreseeable actions are described in appendix D. Several past and present activities on federal land and lands of other ownership have affected, and would continue to affect, water quality, water yield, and riparian health and vigor in the cumulative effects analysis area for the foreseeable future. Federal and private roads and culverts constructed at road/stream crossings in the planning area have affected streams and riparian areas. There are numerous sediment delivery points on existing roads as described previously, and culverts represent a permanent grade control in the stream channels where they reside. These existing roads also have several road/stream crossings. Past management activities in the planning area that affect baseline water quality, riparian, and aquatic habitat to varying degrees include road construction and maintenance, wildfire suppression and prescribed fire, timber harvest, grazing, mining, and dispersed recreation. Forest and county road systems can adversely affect streams by increasing sediment loads, changing runoff rates, and altering stream channel morphology. Incorrectly installed or undersized culverts may be fish passage barriers that prevent upstream fish passage, which limits the amount of available, suitable fish habitat.

Undersized culverts can affect the stream's ability to convey water and sediment, and represent an increased risk of failure and subsequent erosion and deposition of sediment into stream channels. Culverts directly interact with channels and can affect channel morphology and channel migration patterns, and local hydraulics that may influence the stream channel.

Timber harvest has occurred throughout the proposed planning area and may modify the way water is transported, change hillslope processes, and potentially increase upland sediment yields. Timber harvest may also increase the rate and timing of snowmelt runoff by compacting soil, removing vegetation, and leaving forest openings that increase snow retention. These changes can modify fluvial processes and change channel morphology.

Continued grazing in riparian areas and cattle trailing along streams within grazing allotments would likely continue to contribute elevated sediment levels to streams in the watershed; although, adaptive management provisions in allotment management plans should be implemented where necessary to reduce livestock impacts. In the absence of other reductions to sediment delivery in the watershed, streams in several of the watersheds where treatment is planned would continue to receive sediment from anthropogenic sources.

In the past, mining has contributed sediment to stream channels in the watersheds. Additionally, abandoned mines can pose chronic or episodic water quality problems to forest streams.

Foreseeable timber harvest and prescribed fire activities in the analysis area (Helmville Face Wildlife Habitat Improvement Project, Dalton Mountain Forest Restoration and Fuels Reduction Projects or Stonewall Vegetation Project) on National Forest System land are not likely to substantially affect water quality, RHCAs or fisheries due to use of INFISH buffers and strict adherence to forestry BMPs. Timber-sale road improvements included in the project design would be expected to reduce sediment delivery from project-area roads through implementation of road BMPs. The impacts of roads on water quality, as outlined in the Affected Environment section of this report, would not be altered as a direct result of the action alternatives. However, the action alternatives lay the groundwork for future road decommissioning, which would reduce sediment delivery from forest roads. Other activities that would serve to reduce sediment delivery to streams in project watersheds are planned in the future within the cumulative effects analysis area. Such activities include watershed improvement projects (Stonewall and Sauerkraut Creek Restoration Projects), culvert upgrades, and effectively implemented allotment management plan (AMP) revisions, among others.

Effects Common to All Action Alternatives

All action alternatives would restrict public wheeled motorized use (where not already restricted), to designated routes only (36 CFR 212.50(a)). If other unclassified routes are discovered that are not currently captured in this analysis, they would be considered non-System roads and would not be open for motorized use. Changes in route classifications would not change the effects to salmonid fish, Western pearlshell mussels and habitat that is associated with sediment delivery from high risk roads and the presence of stream-route intersections. Additionally, a road that is a sediment source generally remains so regardless of level of use. Although vegetation can eventually become re-established on roads that are unused or minimally used, this process typically occurs over many years, during which erosion and sediment delivery continue to occur. Thus, seasonal closures of roads were not considered to be a project-related positive or negative impact to resources, but rather a continuation of the existing condition. The act of closing a road to all but administrative use without action to stabilize the road (e.g., culvert removal, soil decompaction, seeding) may not result in watershed improvement. It is possible for further compromised watershed conditions because maintenance may be reduced and plugged culverts could fail.

All action alternatives include the decommissioning of certain system routes as well as most unclassified routes. Action alternatives propose roads for closure, storage and decommissioning. For purposes of this analysis, we assume all roads proposed for storage under all action alternatives would be stored at the 3-S level and all roads proposed for decommissioning would be decommissioned at the 4 level. This would result in benefits to water quality and riparian values throughout the planning area through the elimination of several miles of road segments that are connected to stream channels.

Additionally the Helena National Forest would continue with routine road and trail maintenance on system roads and trails for All Alternatives. Although road and trail maintenance may generate small amounts of sediment in the short term, the long term benefit is improved surface drainage.

Under alternatives 2, 3 and 4, parking safely next to the side of a road within 30 feet from the edge of the road would be allowed. In addition, wheeled motorized vehicle travel for camping would be allowed (and parking associated with camping) within 300 feet of designated system routes, including roads and trails (unless signed otherwise or specifically closed) These activities would be allowed as long as: no new permanent routes are created by this activity, no damage to existing vegetation, soil, or water resource occurs, travel off-route does not cross streams, and travel off-route does not traverse riparian or wet areas. While these protective measures would ensure that any measurable impacts to fish, mussels and habitat are minimized, there is potential for localized direct and indirect effects as a result of these activities. This includes damage or removal of vegetation in riparian areas and damage to stream banks that may contribute sediment to streams. These effects would be localized to the immediate stream segment and not measurable from a watershed perspective. If evidence of these sorts of impacts is apparent, closure orders would be issued and the site rehabilitated to its previous condition so that no long-term or more than minor impacts would result.

Approximately 20 - 30 miles of new trail construction (depending on the alternative) would be for non-motorized use only and would therefore be narrow trail, designed only for non-motorized use. Some of these routes fall on state and private land. While most of the proposed mountain bike trail system (80-90 miles, depending on the alternative) would be on existing roads and trails under both of these alternatives, there are many areas where short segments of new trail construction would be required to connect areas. Trails would be planned and constructed to avoid sensitive areas, using all INFISH and BMP guidelines to minimize impacts to habitat.

The potential direct/indirect and cumulative effects of implementing the Forest Plan Big Game Security Amendment Alternative B (changing the language in the Forest Plan as described in chapter 2 and appendix F) would have no impacts to fisheries or their habitats in the planning area.

Alternative 1 – No Action

Direct Effects and Indirect Effects

Under alternative 1, no new management actions are proposed and current conditions would continue. For more information on sediment modeling see the Hydrology Section starting on page108. See also the comparison table at the end of this section.

Measurement Indicators:

- **Road sediment reduction estimates resulting from road storage or decommissioning in tons per year**
    - There would not be any roads put into storage or decommissioned under this alternative, therefore, there would not be any corresponding reductions in sediment

generated from roads. As shown in the hydrology section of this chapter, planning area roads are contributing approximately 285 tons of sediment per year. Fisheries in-stream habitats would remain at risk of sediment altering spawning habitat and pool depths.

- **Miles of road or trail reclaimed in the INFISH buffers along streams (riparian habitat conservation areas)**
  - There are approximately 95 miles of existing motorized routes in all INFISH RHCAs combined. There would not be any road or trail reclaimed in the 150-foot INFISH buffer along streams. Roads located within RHCAs would remain hydrologically connected to streams, contributing sediment, altering riparian habitat, and floodplain connectivity and function.
- **Number of road stream crossings and relationship to fish bearing streams**
  - There are approximately 420 stream crossings on existing routes in all INFISH RHCAs combined. No roads stream crossings would be removed under alternative A. Undersized culverts that are at risk of failure from flooding would continue to be sources of erosion. Culverts that currently block fish passage would continue to limit salmonid migrations for spawning feeding and rearing.
- **Miles of high/moderate risk roads and relationship to fish bearing watersheds**
  - High/moderate risk roads in fish bearing watersheds would remain in the landscape. High/moderate risk roads are located on high/moderate erosive soils that contribute sediment to streams, have high number of culverts that reduce stream capacity, are located in RHCAs and impair riparian habitat and reduce floodplain connectivity and function.
  - On the east side of the Continental Divide, INFISH does not apply. In this portion of the planning area, RHCAs are 150 feet on either side of perennial streams. There are 17 miles of existing open motorized routes in eastside RHCAs and this would not change with alternative 1.
- **Consistency of alternatives with Forest Plan guidance for threatened, endangered and sensitive fish and aquatic species**
  - The no-action alternative is not consistent with the Forest Plan for TES fish and aquatic species. The current road system condition and its location have negative impacts to fisheries and aquatic species due to culverts that block fish passage and are at risk or failure, and sedimentation from roads within 150 foot of streams that reduce riparian and floodplain connectivity and function. While some improvements would occur over time associated with routine road maintenance and project-specific actions, alternative 1 would not move the project area toward desired conditions when compared to the action alternatives.

Cumulative Effects

Combining the impacts of implementing alternative 1 with other past, present and reasonably foreseeable future actions in the planning area (appendix D), there may be measurable cumulative impacts as the impacts of roads on aquatic species and water quality would continue at the current levels since no roads would be removed from the road system. Routine road maintenance would continue to occur and result in a reduction in sedimentation to streams.

Alternative 2

Project Design Features

Project design features specific to aquatic species and habitat are listed in chapter 2 starting on page 42, and apply to alternatives 2, 3, and 4.

Direct and Indirect Effects

Table 36 and table 37 summarize alternative 2 effects to the measurement indicators for water quality and fisheries. For more information on the sediment modeling information presented in these tables see the Hydrology Section starting on page 108. See also the comparison table at the end of this section.

Table 36. Alternative 2 miles of routes to be decommissioned or stored within INFISH buffers (RHCA) in the planning area

	Category 1, 300 feet from streams	Category 2, 150 feet from streams	Category 4 Priority Buffer, 50 feet from streams	Category 4 Non-Priority Buffer, 50 feet from streams
Total Miles	18.6	2.0	0	2.1

Table 37. Alternative 2 stream crossings to be removed on decommissioned and stored routes within INFISH buffers (RHCA) in the planning area.

	Category 1, 300 feet from streams	Category 2, 150 feet from streams	Category 4 Priority Buffer, 50 feet from streams	Category 4 Non-Priority Buffer, 50 feet from streams
Total Stream Crossings	38	7	0	43

Measurement Indicators:

- **Road sediment reduction estimates resulting from road storage or decommissioning in tons per year**
    - The total reduction in average annual sediment transport from roads to streams for alternative 2 was modeled to be roughly 3 tons per year less than the existing condition. Trout use redds (nests dug by fish in streambed gravels) in flowing waters for their reproductive strategy. When excessive sediment accrues to spawning and rearing sites, trout embryo and fry success decline below natural rates. Additionally, other trout life history elements such as juvenile survival, growth, and adult survival also can be at risk if excess sediment reduces cobble spaces in riffle areas and pool volumes. Everest et al. (1987, pg. 133) concluded that salmonid species can cope with the natural variability in sediments, but their populations can be reduced substantially by persistent sedimentation that exceeds the natural levels under which they evolved. Average fine sediments in trout spawning habitat within streams in the Blackfoot travel planning area may show short-term increases in fines at depth. In the long term, stream channels would show measurable decreases in the levels of fines as planning area roads would deliver roughly 3 tons less sediment per year. The long-term benefits from decreased annual sediment loads would outweigh the short term

increases in sediment from ground disturbance as culverts are removed and stream channels reconfigured. For the road segments to be decommissioned, the reduction in sediment delivery would be permanent.

- **Miles of road or trail reclaimed in the INFISH buffer along streams (riparian habitat conservation areas)**
  - When roads are constructed adjacent to streams, riparian vegetation is often removed to accommodate the road right-of-way, improve visibility, and reduce the hazard of trees falling on the roadway. This action can reduce shading of the stream, however, causing increased stream temperatures, reduced potential for recruiting large woody debris in the stream, reduced leaf fall and riparian invertebrates, and loss of habitat for aquatic and riparian species. Roads located within the INFISH buffers are hydrologically connected to streams, contributing sediment, altering riparian habitat, and floodplain connectivity and function.
  - The planning area HUCs would have a reduction of approximately 22 miles of road within INFISH buffers, all categories combined. These HUCs would have the potential for a reduction in sediment entering the streams thus benefiting fish and mussel habitat. As the obliterated/ stored roads revegetate, riparian areas would begin to function properly, limiting sediment delivery to streams and providing shade and woody debris to streams.
- **Number of road stream crossings and relationship to fish bearing streams**
  - Culverted road-stream crossings can cause large inputs of sediment to streams when flow capacity is exceeded, or the culvert inlet is plugged and stream flow overtops the road fill. The result is often erosion of the crossing fill, diversion of stream flow onto the road surface or inboard ditch, or both. Culverted road-stream crossings can sometimes block the migration of fishes and other organisms in streams, which can have serious consequences on fish life histories and populations. Sometimes maintaining barriers at road crossings is desirable where such barriers prevent invasions by unwanted aquatic species. Most culvert migration blockages prevent or restrict upstream migration, though sometimes downstream migration through a culvert can pose hazards to the fish from poor outlet conditions (for example, high perch with no outlet pool). Blockages at the crossing may be partial or total; they can affect adult spawners, migrating juvenile fish, or both.
  - An approximate total of 88 stream crossings would be restored under alternative 2. Thirty-eight culverts are proposed to be removed on fish bearing streams within the Category 1, 300-foot buffer (table 37). These include several streams that contain bull trout (Arrastra, Beaver and Poorman). Three of the HUCs in the planning area, (Humbug, Sauerkraut and Upper Alice) would have roads decommissioned and culverts permanently removed for a total of 17 and channels restored. Humbug Creek contains westslope cutthroat trout and Sauerkraut and Alice Creek contain bull trout and westslope cutthroat trout. An additional 7 would be removed with the Category 2, 150-foot buffer and 43 culverts would be removed from Category 4 50-foot buffers.

    Removing culverts that are currently undersized and at risk of failure from flooding would remove sources of erosion. Removal of culverts that currently block fish passage would restore migrations for spawning and rearing for bull trout and westslope cutthroat trout and should trend toward increases in population numbers with increases in habitat length and quality. The total of 88 culvert removals and associated instream channel work would likely be implemented over several years to limit impacts of sediment generated on any watershed. Additional designs features to reduce or eliminate adverse impacts from project activities, and are incorporated as an integrated part of Alternatives 2. Project design features are based upon standard practices and operating procedures that have been employed and proved effective in similar circumstances and conditions. Project design features prescribe measures that would reduce or eliminate potential adverse effects of Alternatives 2 and are non-discretionary once approved in a decision. Sediment would be generated during culvert removal; however, in long term benefits fish migration and decreased erosion would far outweigh the short term negative effects.

Alternative 2 includes 0.2 miles of new road construction within RHCAs. Effects to streams systems should be negligible due to the very low mileage and use of BMPs to limit sedimentation. Alternative 2 also proposes approximately 7.6 miles of unclassified roads being added to the forest system as open roads or trails. Adding the unclassified roads to the system adds 38 culverts. These are not new construction or installations. Adding these roads to the systems would add them to the road maintenance schedule. Annual road maintenance would improve road drainage and reduce sediment delivery to streams. With the incorporation of BMPs and the project design features, those roads and stream crossings can be designed to minimize sediment delivery to streams and impacts to riparian areas.

- **Miles of high/moderate risk roads and relationship to fish bearing watersheds**

    - The Watershed/Fisheries portion of the Helena Forest Roads Analysis (USDA Forest Service 2004) identified the miles of all existing Helena Forest system roads that poses high risk to watersheds and fisheries throughout the Forest. For this planning area there are substantial miles of road that pose high risk for sediment delivery and many sediment delivery points. Stream crossings occur throughout the planning area and roads are located near and parallel to streams in some instances. These roads are located on high/moderate erosive soils that contribute sediment to streams, have high number of culverts that reduce stream capacity, are located in RHCAs and impair riparian habitat and reduce floodplain connectivity and function.

    - The Forest RAP (USDA 2004) identified roads in the Beaver Creek watershed to have high potential to modify surface and subsurface hydrology; it also had high mileage on erosive soils. The RAP also identified roads with high mileage on slide-prone soils in the Willow, Sauerkraut, Poorman, Nevada, Alice, Upper Blackfoot River, Hogum, Copper, Virginia, and the North Fork Little Prickly Pear. Alternative 2 proposes storage or decommissioning of about 18.6 miles within 300 feet of fish bearing streams, including roads in Alice, Humbug and Sauerkraut watersheds that are rated high/moderate risk roads in fish bearing watersheds. Removal of roads from unstable soil types reduces the risk of road caused landslides. Riparian areas would revegetate and provide shade to streams and future large wood structure. Removal of culverts would remove barriers to migration to allow for connected populations.

    On the east side of the Continental Divide, INFISH does not apply. In this portion of the planning area, RHCAs are 150 feet on either side of perennial streams. In this area, alternative 2 would decommission about 2 miles of open routes in these areas, less than that proposed for alternative 3 and 4.

- **Consistency of alternatives with Forest Plan guidance for threatened, endangered and sensitive fish and aquatic species.**

- Alternative 2 is consistent with the Forest Plan for TES fish and aquatic species. Alternative 2 would restore riparian areas and stream channels, improving RMOs and removing negative impacts to fisheries and aquatic species due to culverts that block fish passage and are at risk or failure. Alternative 2 would reduce sedimentation from roads to streams that reduce riparian and floodplain connectivity and function.

Cumulative Effects

The main effect this travel plan influences is the decrease in water quality due to sediment flowing from roads. Alternative 2 would reduce the cumulative watershed effects of road sediment delivery through decommissioning of forest roads, specifically those decommissioned that cross or closely parallel stream networks. The impacts of roads on fisheries habitat, as outlined in the Affected Environment section of this report, would be improved as a direct result of this action alternative. Furthermore, through this decision, this alternative would allow the decommissioning of unclassified routes that currently do not receive annual maintenance, which would also decrease the amount of sediment reaching streams.

Combining the impacts of implementing alternative 2 with other past, present and reasonably foreseeable future actions in the planning area (appendix D), there may be measurable cumulative impacts as the impacts of roads on aquatic species and water quality would continue although at a minor reduction from the current levels as 22.7 miles of roads and 17 culvert crossings would be removed from the road system resulting in 2.8 tons reduction in sediment per year. Routine road maintenance would continue to occur and result in a further reduction in sedimentation to streams due to improved surface drainage.

Alternative 2 would potentially influence stream temperature along and downstream from segments of stream where roads and crossings are decommissioned and native riparian vegetation and floodplain connectivity are restored.

Alternative 3

Direct Effects and Indirect Effects

Table 38 and table 39 summarize alternative 3 effects to the measurement indicators for water quality and fisheries. For more information on the sediment modeling and information presented in these tables see the Hydrology Section starting on page 108. See also the comparison table at the end of this section.

Table 38. Alternative 3 miles of routes to be decommissioned or stored within INFISH buffers (RHCA) in the planning area

	Category 1, 300 feet from streams	Category 2, 150 feet from streams	Category 4 Priority Buffer, 50 feet from streams	Category 4 Non-Priority Buffer, 50 feet from streams
Total Miles	32.4	4.4	0	3.6

Table 39. Alternative 3 stream crossings to be removed on decommissioned and stored routes within INFISH buffers (rhca) in the planning area

	Category 1, 300 feet from streams	Category 2, 150 feet from streams	Category 4 Priority Buffer, 50 feet from streams	Category 4 Non-Priority Buffer, 50 feet from streams
Total Stream	61	14	1	81

	Category 1, 300 feet from streams	Category 2, 150 feet from streams	Category 4 Priority Buffer, 50 feet from streams	Category 4 Non-Priority Buffer, 50 feet from streams
Crossings				

Measurement Indicators:

- **Road sediment reduction estimates resulting from road storage or decommissioning in tons per year**
    - The total reduction in average annual sediment transport from roads to streams for alternative 3 was modeled to be roughly 6 tons per year less than the existing conditions. Trout use redds (nests dug by fish in streambed gravels) in flowing waters for their reproductive strategy. When excessive sediment accrues to spawning and rearing sites, trout embryo and fry success decline below natural rates. Additionally, other trout life-history elements such as juvenile survival, growth, and adult survival also can be at risk if excess sediment reduces cobble spaces in riffle areas and pool volumes. Everest et al. (1987, pg. 133) concluded that salmonid species can cope with the natural variability in sediments, but their populations can be reduced substantially by persistent sedimentation that exceeds the natural levels under which they evolved. Average fine sediments in trout spawning habitat within the planning area streams may show short-term increases in fines at depth. In the long term, stream channels would show measurable decreases in the levels of fines as planning area roads would deliver roughly 6 tons less sediment per year (see Hydrology Section for more information on sediment modeling. The long-term benefits from decreased annual sediment loads would lead to substantial benefits in bull trout, westslope cutthroat trout and Western pearlshell mussel habitat, and would outweigh the short-term increases in sediment from ground disturbance as culverts are removed and stream channels reconfigured. For the road segments to be decommissioned, the reduction in sediment delivery would be permanent.
- **Miles of road or trail reclaimed in the INFISH along streams (riparian habitat conservation areas)**
    - When roads are constructed adjacent to streams, riparian vegetation is often removed to accommodate the road right-of-way, improve visibility, and reduce the hazard of trees falling on the roadway. This action can reduce shading of the stream, however, causing increased stream temperatures, reduced potential for recruiting large woody debris in the stream, reduced leaf fall and riparian invertebrates, and loss of habitat for aquatic and riparian species. Roads located within INFISH buffers are hydrologically connected to streams, contributing sediment, altering riparian habitat, and floodplain connectivity and function.
    - Twenty-four of the planning area HUCs would have reductions in the miles of road for a total reduction of 32.4 miles within 300 feet of streams. The total mileage of decommissioning and storage for Alternative 3 is about 40 miles; this would have the potential for a reduction in sediment entering the streams thus benefiting fish habitat. As the obliterated/ stored roads revegetate, riparian areas would begin to function properly, limiting sediment delivery to streams and providing shade and woody debris to streams. Road decommissioning and storage implementation would be completed over several years, staggering the impacts of the sediment generated from ground disturbing activities.

- **Number of road stream crossings and relationship to fish bearing streams**
    - Culverted road-stream crossings can cause large inputs of sediment to streams when flow capacity is exceeded, or the culvert inlet is plugged and stream flow overtops the road fill. The result is often erosion of the crossing fill, diversion of stream flow onto the road surface or inboard ditch, or both. Culverted road-stream crossings can sometimes block the migration of fishes and other organisms in streams, which can have serious consequences on fish life histories and populations. Sometimes maintaining barriers at road crossings is desirable where such barriers prevent invasions by unwanted aquatic species. Most culvert migration blockages prevent or restrict upstream migration, though sometimes downstream migration through a culvert can pose hazards to the fish from poor outlet conditions (for example, high perch with no outlet pool). Blockages at the crossing may be partial or total; they can affect adult spawners, migrating juvenile fish, or both.
    - An approximate total of 157 stream crossings in INFISH buffers would be restored under alternative 3. The Helena Forest Roads Analysis Process (USDA Forest Service 2004) identified roads in the Nevada Creek watershed to have high number of road stream crossings with the potential to modify surface and subsurface hydrology. Ten culverts in the Nevada watersheds would be removed under this alternative. Streams in the planning area would have 109 culverts removed on decommissioned roads and 48 culverts removed on roads in long term storage. Twenty two culverts are proposed for removal in Poorman and 21 in Alice Creek which contain bull trout and are critical habitat. Undersized culverts at risk of failure from flooding would remove sources of erosion. Removal of culverts that currently block fish passage would restore migrations for spawning and rearing of bull trout and westslope cutthroat trout and should trend toward increases in population numbers with increases in habitat length and quality. Sediment would be generated during culvert removal; however, the long-term benefits of fish migration and decreased erosion would far outweigh the short-term negative effects. Additionally the culvert removals would not be implemented in the same year, thus staggering the amount of sediment input to watersheds.
    - Additional designs features to reduce or eliminate adverse impacts from project activities are incorporated as an integrated part of the action alternatives. Project design features are based upon standard practices and operating procedures that have been employed and proved effective in similar circumstances and conditions. Project design features prescribe measures that would reduce or eliminate potential adverse effects of alternatives 3 and are non-discretionary once approved in a decision. Sediment would be generated during culvert removal; however, long-term benefits for fish migration and decreased erosion would far outweigh the short-term negative effects.
    - Alternative 3 includes 0.8 miles of new road construction within RHCAs. Effects to streams systems should be negligible due to the very low mileage and use of BMPs to limit sedimentation. Alternative 3 also proposes 1.1 miles of unclassified roads being added to the forest system as open roads or trails. Adding the non-system roads to the system adds 6 culverts. These are not new construction or installations. Adding these roads to the systems would add them to the road maintenance schedule. Annual road maintenance would improve road drainage and reduce sediment delivery to streams. With the incorporation of BMPs and the project design features, those roads and

stream crossings can be designed to minimize sediment delivery to streams and impacts to riparian areas.

- **Miles of high/moderate risk roads and relationship to fish bearing watersheds**
    - The Watershed/Fisheries portion of the Helena Forest Roads Analysis (USDA Forest Service 2004) identified the miles of all existing Helena Forest System roads that pose high risk to watersheds and fisheries throughout the Forest. High/moderate risk roads are roads located on high/moderate erosive soils that contribute sediment to streams, have high number of culverts that reduce stream capacity, are located in RHCAs and impair riparian habitat and reduce floodplain connectivity and function.
    - For the Blackfoot travel planning area there are substantial miles of road that pose high risk for sediment delivery and many sediment delivery points. Stream crossings occur throughout the area and roads are located near, and parallel streams in some instances. These roads are located on high/moderate erosive soils that contribute sediment to streams, have high number of culverts that reduce stream capacity, are located in riparian habitat conservation areas, and impair riparian habitat and reduce floodplain connectivity and function.
    - Alternative 3 proposes decommissioning of 32.4 miles of roads including roads in all of these rated high/moderate risk watersheds and additional fish bearing watersheds listed in table 35.
    - On the east side of the Continental Divide, INFISH does not apply. In this portion of the planning area, RHCAs are 150 feet on either side of perennial streams. In this area, alternative 3 would decommission about 3 miles of open routes in these areas, similar to alternative 4 and more than that proposed for alternative 2.
- **Consistency of alternatives with Forest Plan guidance for threatened, endangered and sensitive (TES) fish and aquatic species**
    - Alternative 3 is consistent with the Forest Plan for TES fish and aquatic species. Considering the other action alternatives, alternative 3 would restore riparian areas and stream channels, improving RMOs and removing negative impacts to fisheries and aquatic species due to culverts that block fish passage and are at risk or failure. Alternative 3 would have a reduction of approximately 40 miles total for reduce sedimentation from roads to streams that impairs riparian and floodplain connectivity and function.

Cumulative Effects

The main effect this travel plan influences is the decrease in water quality due to sediment flowing from roads. Alternative 3 would reduce the cumulative watershed effects of road sediment delivery through decommissioning of forest roads, specifically those decommissioned that cross or closely parallel stream networks. The impacts of roads on fisheries habitat would be improved as a direct result of this action alternative. Furthermore, through this decision, this alternative would allow the decommissioning of unclassified routes that currently do not receive annual maintenance, which would also decrease the amount of sediment reaching streams.

Combining the impacts of implementing alternative 3 with other past, present and reasonably foreseeable future actions in the planning area (appendix D), there may be measurable cumulative impacts as the impacts of roads on aquatic species and water quality would continue although at a reduction from the current levels as 40.4 miles of roads and 157 culvert crossings would be removed from the road system resulting in 6 tons reduction in sediment per year. Routine road maintenance would continue to occur and result in a further reduction in sedimentation to streams due to improved surface drainage.

The proposed alternative 3 would potentially influence stream temperature along and downstream from segments of stream where roads and crossings are decommissioned and native riparian vegetation and floodplain connectivity are restored.

The proposed alternative 3 would potentially influence stream temperature along and downstream from segments of stream where roads and crossings are decommissioned and native riparian vegetation and floodplain connectivity are restored.

Alternative 4

Direct Effects and Indirect Effects

The following tables summarize alternative 4 effects to the measurement indicators for fisheries.

Table 40. Alternative 4 decommissioned and stored routes within INFISH buffers (RHCA) in the planning area

	Category 1, 300 feet from streams	Category 2, 150 feet from streams	Category 4 Priority Buffer, 50 feet from streams	Category 4 Non-Priority Buffer, 50 feet from streams
Total Miles	**32.1**	**4.9**	**0**	**3.4**

Table 41. Alternative 4 stream crossings to be removed on decommissioned and stored routes within INFISH buffers (RHCA) in the planning area

	Category 1, 300 feet from streams	Category 2, 150 feet from streams	Category 4 Priority Buffer, 50 feet from streams	Category 4 Non-Priority Buffer, 50 feet from streams
Totals	**59**	**16**	**1**	**81**

Measurement Indicators

- **Road sediment reduction estimates resulting from road storage or decommissioning in tons per year**
    - The total reduction in average annual sediment transport from roads to streams for alternative 4 was modeled to be roughly 8 tons per year less than the existing conditions. Trout use redds (nests dug by fish in streambed gravels) in flowing waters for their reproductive strategy. When excessive sediment accrues to spawning and rearing sites, trout embryo and fry success decline below natural rates. Additionally, other trout life history elements such as juvenile survival, growth, and adult survival also can be at risk if excess sediment reduces cobble spaces in riffle areas and pool volumes. In 1987, Everest et al. concluded that salmonid species can cope with the natural variability in sediments, but their populations can be reduced substantially by persistent sedimentation that exceeds the natural levels under which they evolved (pg. 133). Average fine sediments in trout spawning and western pearlshell mussel habitat within the planning areas stream may show short-term increases in fines at depth. In the long term, stream channels would show measurable decreases in the levels of fines as planning area roads would deliver roughly 8 tons less sediment per

year. The long-term benefits from this decreased annual sediment loads would lead to substantial benefits in bull trout and westslope cutthroat trout habitat, and would outweigh the short-term increases in sediment from ground disturbance as culverts are removed and stream channels reconfigured. For the road segments to be obliterated, the reduction in sediment delivery would be permanent.

- **Miles of road or trail reclaimed within INFISH buffers along streams (riparian habitat conservation areas)**
  - When roads are constructed adjacent to streams, riparian vegetation is often removed to accommodate the road right-of-way, improve visibility, and reduce the hazard of trees falling on the roadway. This action can reduce shading of the stream, however, causing increased stream temperatures, reduced potential for recruiting large woody debris in the stream, reduced leaf fall and riparian invertebrates, and loss of habitat for aquatic and riparian species. Roads located within INFISH buffers are hydrologically connected to streams, contributing sediment, altering riparian habitat, and floodplain connectivity and function.
  - Twenty-four of the planning area HUCs (table 22) would have reductions in the miles of road for a total reduction of about 40 miles; 32.1 miles are proposed to be decommissioned or stored within Category 1, 300-foot buffer of fish bearing streams. These HUCs would have the potential for a reduction in sediment entering the streams thus benefiting fish and mussel habitat. As the obliterated/ stored roads revegetate, riparian areas would begin to function properly, limiting sediment delivery to streams and providing shade and woody debris to streams. Road decommissioning and storage implementation would be completed over several years, staggering the impacts of the sediment generated from ground disturbing activities.
- **Number of road stream crossings and relationship to fish bearing streams**
  - Culverted road-stream crossings can cause large inputs of sediment to streams when flow capacity is exceeded, or the culvert inlet is plugged and stream flow overtops the road fill. The result is often erosion of the crossing fill, diversion of stream flow onto the road surface or inboard ditch, or both. Culverted road-stream crossings can sometimes block the migration of fishes and other organisms in streams, which can have serious consequences on fish life histories and populations. Sometimes maintaining barriers at road crossings is desirable where such barriers prevent invasions by unwanted aquatic species. Most culvert migration blockages prevent or restrict upstream migration, though sometimes downstream migration through a culvert can pose hazards to the fish from poor outlet conditions (for example, high perch with no outlet pool). Blockages at the crossing may be partial or total; they can affect adult spawners, migrating juvenile fish, or both.
  - The Forest RAP (USDA 2004) identified roads in the Nevada Creek watershed to have high number of road stream crossings with the potential to modify surface and subsurface hydrology. An approximate total of 157 stream crossings in INFISH buffers would be restored under alternative 4. Six culverts in the Nevada watersheds would be removed under this alternative. Twenty-five of the HUCs in the planning area would have 108 culverts removed on decommissioned roads and 49 culverts removed on roads in long- term storage. Twenty-one culverts are proposed for removal in Poorman and 23 in Alice Creek which contain bull trout and critical

habitat (table 29). Alternative 4 proposes 59 culverts to be removed on fish bearing streams.

- Undersized culverts at risk of failure from flooding would remove sources of erosion. Removal of culverts that currently block fish passage would restore migrations for spawning and rearing of bull trout and westslope cutthroat trout and should trend toward increases in population numbers with increases in habitat length and quality. Sediment would be generated during culvert removal; however, in long-term benefits fish migration and decreased erosion would far outweigh the short-term negative effects. Additionally the culvert removals would not be implemented in the same year, thus staggering the amount of sediment input to watersheds.
- Additional designs features to reduce or eliminate adverse impacts from project activities, and are incorporated as an integrated part of the action Alternatives. Project design features are based upon standard practices and operating procedures that have been employed and proved effective in similar circumstances and conditions. Project design features prescribe measures that would reduce or eliminate potential adverse effects of Alternatives 4 and are non-discretionary once approved in a decision. Sediment would be generated during culvert removal; however, in long term benefits fish migration and decreased erosion would far outweigh the short term negative effects.
- Alternative 4 includes 0.8 miles of new road construction within RHCAs. Effects to streams systems should be negligible due to the very low mileage and use of BMPs to limit sedimentation. Alternative 4 also proposes about 2.7 miles of unclassified roads be added to the Forest System as open roads or trails. Adding the non-System roads adds seven culverts. These are not new construction or installations. Adding these roads to the systems would add them to the road maintenance schedule. Annual road maintenance would improve road drainage and reduce sediment delivery to streams. With the incorporation of BMPs and the project design features, those roads and stream crossings can be designed to minimize sediment delivery to streams and impacts to riparian areas.

- **Miles of high/moderate risk roads and relationship to fish bearing watersheds**
  - The Watershed/Fisheries portion of the Helena National Forest Roads Analysis (USDA Forest Service 2004) identified the miles of all existing Helena Forest System roads that poses high risk to watersheds and fisheries throughout the Forest. High/moderate risk roads are roads located on high/moderate erosive soils that contribute sediment to streams, have high number of culverts that reduce stream capacity, are located in RHCAs and impair riparian habitat and reduce floodplain connectivity and function. For this planning area there are substantial miles of road that pose high risk for sediment delivery and many sediment delivery points. Stream crossings occur throughout the planning area and roads are located near and parallel to streams in some instances. These roads are located on high/moderate erosive soils that contribute sediment to streams, have high number of culverts that reduce stream capacity, are located in RHCAs and impair riparian habitat and reduce floodplain connectivity and function.
  - The Forest RAP (USDA 2004) identified roads in the Beaver Creek watershed to have high potential to modify surface and subsurface hydrology; it also had high mileage on erosive soils. The RAP also identified roads with high mileage on slide-

prone soils in the Willow, Sauerkraut, Poorman, Nevada, Alice, Upper Blackfoot River, Hogum, Copper, Virginia, and the North Fork Little Prickly Pear. Alternative 4 proposed decommissioning and storage of about 32.1 miles of roads within 300 feet of fish-bearing streams, including roads in these rated high/moderate watersheds. Consistency of alternatives with Forest Plan guidance for threatened, endangered and sensitive fish and aquatic species

- On the east side of the Continental Divide, INFISH does not apply. In this portion of the planning area, RHCAs are 150 feet on either side of perennial streams. In this area, alternative 4 would decommission about 3 miles of open routes in these areas, similar to alternative 3 and more than that proposed for alternative 2.

- **Consistency with Forest Plan guidance for threatened, endangered and sensitive fish species**
    - Alternative 4 is consistent with the Forest Plan for TES fish and aquatic species. Considering the action alternatives, alternative 3 and 4 would restore the greatest amount of riparian areas and stream channels, improving RMOs and removing negative impacts to fisheries and aquatic species due to culverts that block fish passage and are at risk or failure. Alternative 4 would have the most reduction in sedimentation from roads to streams that reduce riparian and floodplain connectivity and function.
    - **Potential Effects to Species Indicators and Habitat Indicators for the Blackfoot Bull Trout Core Population**
    - Species Indicators: 1) Subpopulation Size: MAINTAIN. Some risk for small decreases in bull trout survival in some years in some drainages from sediment increases from road decommissioning and storage projects and culvert removals. These are expected to be short term until vegetation reestablishes on disturbed ground. Removal of culverts will remove instream barriers to migration that may increase connectivity and access to habiat. Risk depends on a variety of factors as detailed in the narrative of Direct and Indirect Effects section of the BA. Although there is some risks for incidental take in the Copper/Landers Local Population it is unlikely that Blackfoot Core population will be affected to the degree that changes in the population size will be measurable. However, an adverse effect call is appropriate because incidental take is possible and is projected as likely in some years. There is also risk for incidental take of bull trout on other streams throughout the analysis area including Beaver Creek, Arrastra Creek, Dry Creek, Poorman Creek, South Fork of Poorman Creek, Sauerkraut Creek, and Nevada Creek from project related activites. With the exception of Copper Creek, none of these streams are considered to be part of a bull trout local population yet bull trout from the various streams likely contribute to the Blackfoot Bull Trout Core population to varying degrees. The exception is upper Nevada Creek which is so isolated from the Blackfoot River that it has no potential to contribute to the Core Bull trout Population. Importantly, any loss of bull trout from the Helena Forest portion of the Blackfoot Bull trout core population is significant from a recovery perspective due to the recent declines in the North Fork of the Blackfoot and the Monture Creek Local Populations.
    - 2) Growth & Survival: MAINTAIN: Some loss of individual bull trout could occur in some years within the important Copper Landers Local Bull trout Population and that can have bearing on the numbers of overall adults in the Core Population. The additional loss from some other streams not part of a recognized local population is

important, but to a lesser degree because the numbers of bull trout contributed are not of the magnitude as to what originates from the Copper drainage.

- 3) Life History Diversity & Isolation: RESTORE. The selected action includes removal of culverts that will remove instream barriers to migration that may increase connectivity and access to habiat. Twenty one culverts are proposed for removal in Poorman and 23 in Alice Creek which contain bull trout and critical habitat. (See table 2). Alternative 4 proposes 59 culverts to be removed on fishbearing streams.
- 4) Persistence and genetic Integrity: MAINTAIN. The magnitude of adverse effect projected is small and may not occur every year in all locations. By ensuring risk for adverse effects to bull trout in the various streams in the project area is kept low and will occur only occasionally in Copper Creek, the number of adult bull trout should not be reduced by large numbers. There is some potential that numbers of bull trout will even increase in the Copper Creek drainage as a function of improved survival associated with recovery due to post fire effects. This is pertinent from the aspect that at least two of the other key bull trout local populations outside the project areas appear to be declining. Loss of individual bull trout from other streams in the project area, not considered a local population, that contribute to the Blackfoot Core Population is also important for the same reasons as discussed for the Copper Landers Local Population.
- Habitat Indicators: Effects calls on Habitat Indicators for each 6th code hydrologic unit of the Blackfoot River within the project area are included in Appendix A of the biological assessment (Rief 2014).
- Bull Trout Critical Habitat: In the 2010 Final Rule on Bull Trout Critical Habitat, the U.S. Fish and Wildlife Service classified the Blackfoot River, and its tributaries Poorman Creek and Copper Creek as bull trout critical habitat The Blackfoot Travel Plan does have some potential to affect bull trout critical habitat so risk for effects to certain Primary Constituent Elements of bull trout critical habitat were assessed in the separate Rief (2014) biological assessment. It is reasonable to conclude that the continuation of existing sediment delivery in all streams throughout the project area has varying potential to affect bull trout critical habitat in the project area. This conclusion is based on the reduction of existing amounts of sediment delivery associated with the project action compared to existing conditions. Associated with the proposed project, there will be increases in sediment delivery over current levels in the short term that could reach bull trout critical habitat, but the long term reduced levels of sediment delivery.

Cumulative Effects

The main effect this travel plan influences is the decrease in water quality due to sediment flowing from roads. Alternative 4 would reduce the cumulative watershed effects of road sediment delivery through decommissioning of forest roads, specifically those decommissioned that cross or closely parallel stream networks. The impacts of roads on fisheries habitat, as outlined in the Affected Environment section of this report, would be improved as a direct result of this action alternative. Furthermore, through this decision, this alternative would allow the decommissioning of unclassified routes that currently do not receive annual maintenance, which would also decrease the amount of sediment reaching streams.

Combining the impacts of implementing alternative 4 with other past, present and reasonably foreseeable future actions in the planning area (appendix D), there may be measurable cumulative impacts as the impacts of roads on aquatic species and water quality would continue although at a reduction from the current levels as 55.6 miles of roads and 157 culvert crossings would be removed from the road system resulting in 7.9 tons reduction in sediment per year. Routine road maintenance would continue to occur and result in a further reduction in sedimentation to streams due to improved surface drainage.

The proposed alternative 4 would potentially influence stream temperature along and downstream from segments of stream where roads and crossings are decommissioned and native riparian vegetation and floodplain connectivity are restored.

Summary of Effects for Alternatives 2, 3, and 4

When combining all measurement indicators, alternative 3 and 4 both have the most miles of road within INFISH buffers of streams to be decommissioned, and the most stream crossings restored. Although not all roads designated to be decommissioned were surveyed or modeled, sediment modeling on surveyed routes provides an estimate of the potential this project has for sediment reduction to project-area streams. Model results of surveyed roads suggested that alternative 4 has the greatest potential to reduce sediment delivery to streams. Alternative 2 has the most miles of non-system roads added to the system and stream crossings. Alternative 3 and 4 have the most miles (0.8) of new construction within all INFISH buffer categories. Alternative 4 has less stream crossings to be restored on storage roads than does alternative 3 or alternative 2, but this number is misleading because many of the roads designated for storage in alternative 2 or 3 will be decommissioned in alternative 4.

Alternative 1will generally not make substantial progress in moving the planning area toward desired conditions and is therefore not consistent with the Forest Plan for TES fish and aquatic species. The current road system condition and its location have negative impacts to fisheries and aquatic species due to culverts that block fish passage and are at risk or failure, and sedimentation from roads within RHCAs that reduce riparian and floodplain connectivity and function. While some improvement could occur over time with routine road maintenance and site-specific projects, this alternative would be less consistent than the action alternatives with the Forest Plan.

Alternative 2 is consistent with the Forest Plan for TES fish and aquatic species and would move the planning area toward desired conditions but less so than under alternatives 3 and 4. Alternative 2 would restore riparian areas and stream channels, improving Riparian management objectives (RMOs) and reducing negative impacts to fisheries and aquatic species due to culvert removals that block fish passage and are at risk or failure. Alternative 2 would have only an approximate 2 percent reduction in open motorized routes in RHCA buffers. Alternative 2 would reduce sedimentation from roads to streams that reduce riparian and floodplain connectivity and function, but would not improve conditions as much as alternative 3 or 4.

Alternative 3 is consistent with the Forest Plan for TES fish and aquatic species and moves the planning area toward desired conditions. Considering all action alternatives, Alternatives 3 and 4 are very similar in the improvement expected to riparian areas and stream channels, improving RMOs and reducing negative impacts to fisheries and aquatic species due to culvert removals that block fish passage and are at risk or failure. Like Alternative 4, Alternative 3 would have an approximate 35 percent reduction in open motorized routes in RHCA buffers, with removal of hundreds of stream crossings and culverts. While there is less than 1 mile or new route constructed planned under alternative 3 and 4, this route construction would be implemented with all project design features and best management practices to ensure any adverse effects are minimized. Approximately 1 mile of unclassified routes would be added to the system in RHCAs and these would also be subject to routine maintenance and best management practices. Approximately 32 miles of high-risk roads would be decommissioned, slightly more than that proposed for alternative 4. Sedimentation to streams would also be reduced (but not as much as it would under alternative 4) and this will improve riparian and floodplain connectivity and function.

Alternative 4 is consistent with the Forest Plan for TES fish and aquatic species and moves the planning area toward desired conditions. Considering all action alternatives, Alternatives 3 and 4 are very similar in the improvement expected to riparian areas and stream channels, improving RMOs and reducing negative impacts to fisheries and aquatic species due to culvert removals that block fish passage and are at risk or failure. Like Alternative 3, alternative 4 would have an approximate 35 percent reduction in open motorized routes in RHCA buffers, with removal of hundreds of stream crossings and culverts. While there is less than 1 mile of new route construction planned under alternative 3 and 4, this route construction would be implemented with all project design features and best management practices to ensure any adverse effects are minimized. Less than 2 miles of unclassified routes would be added to the system in RHCAs and these would also be subject to routine maintenance and best management practices. Approximately 32 miles of high risk roads would be decommissioned, slightly less than that proposed for alternative 3. Sedimentation to streams would also be reduced and this would be greater than for alternative 3 and this will improve riparian and floodplain connectivity and function.

Drainages where fish populations have highest potential to benefit from reductions in sediment in the Blackfoot River drainage include Lower Alice, Anaconda, Lincoln, Willow, Poorman, and Sauerkraut watersheds. Other drainages with somewhat lesser benefit, but still considered to have improved conditions are Beaver, Arrastra, Keep Cool, and Nevada watersheds. As habitat conditions and fish passages improve, there would likely be increases in the species abundance.

Compliance with INFISH

See Forest Plan consistency tables in FEIS Volume 2; INFISH consistency is summarized on page 24. Overall the project meets the intent of INFISH in that Forest wide roads analysis was completed (USDA 2004) that provided a means to assess risk various road segments presented to fisheries. The roads analysis (USDA 2004) information along with the monitoring and inventory of other road segments as part of this project would continue to move the Helena Forest in the direction of meeting the intent of INFISH (1995) road standards RF-2 and RF-3.

Alternative 4 would restore riparian areas and stream channels, improving RMOs and removing negative impacts to fisheries and aquatic species due to culverts that block fish passage and are at risk or failure. Alternative 4 would have an approximate 8-ton-per year reduction in sedimentation from roads to streams that reduce riparian and floodplain connectivity and function. See Section 14 of the biological assessment for a summary of changes in each INFISH RHCA buffer in the planning area.

Bull Trout and Bull Trout Critical Habitat Determinations

Implementation of preferred alternative 4 *May Affect, and is Likely to Adversely Affect* bull trout based on the existing road network and impacts from roads that would remain open and continue to deliver sediment, and the magnitude of short-term increases in sediment as roads are decommissioned and in-stream work of culvert removal for the 6th field HUCs west of the Continental Divide. Over the long-term, sediment delivery would be reduced.

Continuation of existing sediment delivery in all streams throughout the project area has varying potential to affect bull trout critical habitat in the project area. This conclusion is based on the reduction of existing amounts of sediment delivery associated with the project action compared to existing conditions. The action alternatives would result in some increases in sediment delivery over current levels in the short term (dependent on alternative) that could reach bull trout critical habitat, but would result in a long-term reduction in sediment delivery due to proposed road decommissioning and storage. The potential for any cumulative effects to Critical Habitat downstream of the project cannot be determined with certainty as the road decommissioning and storage and culvert removal projects would be staggered in time so as not to overly affect one subwatershed. The level of cumulative effects throughout the project area would reduce the sediment from the existing road system. Although there is a risk for cumulative effects to bull trout critical habitat, the magnitude of risk is judged to be low and discountable for the Blackfoot Travel Plan.

In conclusion, there is some potential for short term negative effects; and risk is considered low for affecting bull trout critical habitat in the Blackfoot River portion of the project area when separated from all other cumulative actions. The overall determination for critical habitat for bull trout associated with alternative 4 is *May Affect, Likely to Adversely Affect* Bull Trout Critical Habitat in the Blackfoot River Section 7 Watershed and the Blackfoot Core Recovery Area.

Table 42. Summary table comparing alternatives[1]

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Motorized Routes Stored or Decommissioned (Miles)				
Category 1 – within 300 feet of fish-bearing streams 95 miles of existing motorized routes	0	18.6	32.4	32.1
Category 2 – within 150 feet of non-fish bearing perennial streams 14 miles of existing motorized routes	0	2.0	4.4	4.9
Category 4 – 50 feet of priority intermittent streams 1 miles of existing motorized routes	0	0	0	0
Category 4 – 50 feet of non-priority intermittent streams 6 miles of existing motorized routes	0	2.1	3.6	3.4
Total All Categories Combined **111 Miles Of Existing Motorized Routes**	**0** **No Reduction**	**Approximately 22 Mile Reduction** **2 Percent Reduction**	**Approximately 40 Mile Reduction** **35 Percent Reduction**	**Approximately 40 Mile Reduction** **35 Percent Reduction**
Stream Crossings Removed on Decommissioned or Stored Routes				
Category 1 – within 300 feet of fish-bearing streams	0	38	61	59

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
There are 215 existing stream crossings in this category				
Category 2 – within 150 feet of non-fish bearing perennial streams 47 existing motorized routes in this category	0	7	14	16
Category 4 – 50 feet of priority intermittent streams There are 17 existing motorized routes in this category	0	0	1	1
Category 4 – 50 feet of non-priority intermittent streams There are 142 existing motorized routes in this category	0	43	81	81
Total All Categories Combined **There Are 421 Existing Stream Crossings on Open Motorized Routes**	**0**	**88**	**157**	**157**
New Motorized Route Construction or Reconstruction				
Category 1 – within 300 feet of fish-bearing streams	0	Less than 0.1	Less than 0.1	Less than 0.1
Category 2 – within 150 feet of non-fish bearing perennial streams	0	0	0.5	0.5
Category 4 – 50 feet of priority intermittent streams	0	0	0.0	0
Category 4 – 50 feet of non-priority intermittent streams	0	Less than 0.1	Less than 0.1	Less than 0.1
Total All Categories Combined	**0**	**0.20**	**0.80**	**0.80**

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Unclassified Routes and Culverts Added to the National Forest System				
Unclassified routes added to the system in all INFISH buffers combined	6	7.6 and 38 culverts	2.8 and 6 culverts	2.7 and 7 culverts
Other Aquatic Habitat Parameters				
Motorized routes stored or decommissioned (miles) in east-side RHCAs (150 feet from perennial streams) There are 17 miles of existing open motorized routes in east-side RHCAs	0	2.4 miles	3 miles	3 miles
Decommissioning of high and moderate risk roads with relationship to fish bearing streams		18.6 miles	32.4 miles	32.1 miles

[1] Inland Fish Strategy Riparian Habitat Conservation Areas (INFISH RHCAs) – applies to areas west of the Continental Divide in the planning area. These numbers are approximate within each category. While mileages are shown for each INFISH category for comparison purposes between alternatives, the total for all INFISH buffers combined may be slightly different than adding up the total for each category due to some overlap in the categories

Table 43. Effects projected for westslope cutthroat trout, bull trout, and western pearlshell mussel habitat common to alternatives 2, 3, and 4

Fish Species and Habitat	Effects Determination
Bull Trout	May Affect, Likely to Adversely Affect bull trout and bull trout critical habitat determination based on the existing road network and impacts from roads that would remain open and continue to deliver sediment, and the magnitude of short-term increases in sediment as roads are decommissioned and in-stream work of culvert removal for the 6th field HUCs west of the Continental Divide.
Westslope Cutthroat Trout	May Impact Individuals, but will not likely contribute to a trend toward federal listing or loss of viability of the population or species for populations both sides of the Continental Divide.
Western Pearlshell Mussel	May Impact Individuals, but will not likely contribute to a trend toward federal listing or loss of viability of the population or species for populations both sides of the Continental Divide.

Westslope Cutthroat Trout Population Viability at the Project Level:

Westslope cutthroat trout are the fish management “indicator species” for the Helena National Forest. They represent a measure of the effects of management activities on habitat with the objective of ensuring population viability (Forest Plan p. II-17). Westslope cutthroat trout are found in the Blackfoot travel planning area, and therefore, serve as the proxy population for viability analysis in fulfillment of the National Forest Management Act viability requirement.

Formal population viability analyses (PVA) are intensive quantitative exercises that incorporate comprehensive data about many factors influencing probability of extinction for a population. Hence, they can be expensive requiring substantial data to build an appropriate model that has proven infeasible for general management purposes. Moreover, there are no consensus guidelines on when and how quantitative PVA should be applied (Ralls et al. 2002, p. 521), and estimations of parameters used in model development when data is unavailable result in model outputs no more accurate than verbal (qualitative) models to aid biologists. In practice, agency biologists assess whether a proposed action increases the likelihood of loss of viability or leads to a trend toward federal listing of a sensitive species with limited information and resources.

This analysis uses a practical approach outlined in Ruggiero et al. (1994) and Region 1 guidance (Draft 01/30/2004) in conjunction with criteria established by Rieman et al. (1993). Simply put, “…an analysis of population viability is about birth, death, immigration, and emigration rates and how environmental or ecological factors affect these rates over time” (Ruggiero et al. 1994, p. 366). Select habitat attributes considered both ecologically significant to fish and sensitive to land management disturbances are borrowed from Overton et al. (1995, p. 1) and Region 1 guidance (Draft 1/30/2004).

The discussion under the Fish Habitat subsection of the Affected Environment section provides rationale for why sediment was used as the significant indicator of concern for fisheries. In summary, sediment in stream substrates was described being the attribute most responsive to disturbance from this project.

Research has shown how increasing and decreasing levels of sediment in trout reproductive habitat affect trout embryo and fry survival rates negatively or positively respectively. When fine sediments elevate beyond natural levels in trout spawning habitat, the reproductive quality of that habitat diminishes resulting in a corresponding decrease in fry production. Estimates of changes in the rates of embryo survival are not necessarily accurate, but are meant to help determine the amount of changes in sediment yield upon WCT populations in question.

This analysis, therefore, predicts a short-term change in substrate composition risks, some minor downward trend in incubation and fry emergence success (birth rate) to the population before recovering to an improved trend over baseline after 3 years. WCT recruitment is likely more than adequate to offset minor short-term sediment increases near the populations in the project area planning area watershed.

In the long term, treating hydrologically connected roads helps recover gravel quality slightly over baseline conditions. Therefore, there is some minimal risk to viability for this WCT population in the short-term with a long-term trend of maintaining reproductive habitat within the acceptable range of variation (32.7 percent plus or minus 9.9 percent).

Western Pearlshell Mussel (*Margaritifera falcata*) Population Viability at the Project Level

For streams within or nearby to the Helena National Forest, the latest surveys by Stagliano (2010) found a number of local populations within the Blackfoot River Drainage, several occurrences in the Smith River; three occurrences in the Boulder River; and one each in Deep Creek and Dry Creek in the Upper Missouri River drainage. No pearlshell populations have been found within streams on lands administered by the Helena Forest in the Blackfoot River drainage. Appendix A contains Map A that depicts the location of surveys conducted in 2007-2009 surveys on the Lincoln Ranger District.

Based on habitats where Pearlshell have been found throughout their range, portions of streams within the Helena Forest administrative boundary where stream gradients are lower than they are in headwater reaches may have suitable habitat for pearlshell mussels. Map A in the Aquatic Species and Habitat Report depicts streams on the Lincoln District that have been surveyed and projected to have suitable habitat. Habitat is not projected as suitable in the Blackfoot River in the vicinity of the confluence of Alice Creek.

Habitat Conditions

An additional means to estimate habitat condition for the pearlshell mussel is to consider various components of fish habitat that likely also provide for the needs for pearlshell mussels. Pertinent fish habitat indicators that are also pertinent to pearlshell mussels include such things as sediment, streambank stability (as an indicator of risk for sediment delivery), pool frequency, and disturbance history within the drainage. These habitat indicators or indicators similar to them are included in the Blackfoot Bull Trout Watershed Baseline. The overall habitat rating in the above mentioned baseline for fish habitat in the Alice 6th code hydrologic unit is functioning at unacceptable risk. Ratings and specific discussion for various parameters within the Alice Creek 6th code taken from the 2000 Watershed Baseline referred to above are included in appendix A of the Aquatic Habitat and Fish Report (Rief 2014).

Direct, Indirect, and Cumulative Effects

Threats to western pearlshell mussel populations include extensive damming, diversions, as well as hydroelectric and other water supply projects. Agricultural runoff (eutrophication), unstable substrate, and siltation have also been cited as major problems to the species (Western Pearlshell – MT Field Guide, online at http://fieldguide.mt.gov/detail_IMBIV27020.aspx).

Sediment that may be generated by the project could affect pearlshell mussel habitat estimated to be present. However, risk for sediment delivery to planning area streams or the Blackfoot River is expected to be low and short term due to the effectiveness of design features planned as part of implementation of the project.

Based on discussions throughout this report the conclusion is that the travel plan does not pose risk for any negative direct or indirect effects to any pearlshell mussels or their habitat that could potentially be present in streams within the planning area. This conclusion relies on the assumption that project design features and BMPs will effectively filter out any sediment delivery that could reach the stream. Further, implementation of the project will not add to any past or ongoing cumulative effects in relation to instream habitat for the mussels. Lastly there are no known risks for cumulative effects from future projects as no projects that could impact pearlshell mussel habitat are reasonably foreseeable at this point in time. Consequently the conclusion for the BNWTP on the western pearlshell mussel is “no impact.”

Based on discussions throughout this report the conclusion is that various ongoing actions do pose risk for some continued negative effects for some streams in some locations (Sauerkraut and Buffalo Gulch, Deep Creek and Dry Creek where pearlshell mussels were or are known to be present as well as some streams with identified suitable habitat. All of the known populations (Buffalo gulch, Sauerkraut Creek, Deep Creek and Dry Creek) have low potential for long term viability. However, as more emphasis is focused on reducing current levels of sediment delivery from roads, the risk for significant negative effects to western pearlshell mussel habitat from any sediment delivery associated with actions on federal lands is projected to be reduced from current levels to some degree, or at least not increased in most drainages at some point in the future once road improvements are completed.

For ongoing actions on the Helena Forest the assessment for the western pearlshell mussel is: “may impact individuals with no expected potential to result in reduced viability of the known local populations” in Sauerkraut Creek, or Buffalo Gulch, due to the low levels of sediment currently present in these two drainages. For the currently nonviable populations in Nevada Creek, Deep Creek and Dry Creek as well as other streams where sediment levels are somewhat elevated over natural levels, continued sediment delivery from within the Forest may result in loss of the current populations or further degrade habitat more quickly than if activities were not occurring.

However, some drainages with projected habitat within and below the Forest that have elevated sediment levels may not be able to provide suitable habitat to sustain viability-even with sediment remediation on roads within the planning area. Importantly, even if mussels are present in some of these un-surveyed streams and the populations become non-viable, the loss of the local populations is not projected to result in a trend toward listing due to the relatively secure overall status of the species across its range as evidenced by its G4/G5 ranking by the Natural Heritage Program. Thus, the overall call for the western pearlshell mussel for various ongoing activities is, “may impact individuals with some potential for loss of local populations, but not trend toward listing.”

Viability of the western pearlshell mussels across the Helena Forest is difficult to assess precisely given that a substantial amount of the projected suitable habitat has not been surveyed. However, using information currently available at the forest level, the conclusion is that the Helena Forest does not support viable populations of western pearlshell mussel. In drainages off the forest there is one local population that is projected to be minimally viable for up to 25 years based on ratings from the Natural Heritage Program.

Compliance with Forest Plan and Other Relevant Laws, Regulations, Policies and Plans

Three government agencies share responsibility for managing aquatic resources. The U.S. Fish and Wildlife Service is a regulatory agency for federally listed species that seeks to recover these species in conjunction with other agencies. Montana Fish, Wildlife and Parks (MFWP) have primary responsibility for managing fish populations. Management of fish and amphibian habitat on National Forest System lands is largely a U.S. Forest Service responsibility. All three agencies cooperate in research and monitoring efforts.

Sensitive species are administratively designated by the Regional Forester and managed under the authority of the National Forest Management Act. Sensitive species present in the planning area westslope cutthroat trout and western pearlshell mussel. The U.S. Forest Service is required to protect their habitat and prevent population declines that would lead to listing under the Endangered Species Act (FSM 2670). The sensitive species analysis in this document is the biological evaluation as outlined in the requirements of FSM 2672.42.

In 1999, the Regional Forester signed the "Conservation Agreement and Management Plan for Westslope Cutthroat Trout in Montana"(MDFW&P 1999). This conservation agreement has five objectives, of which the first three are relevant to National Forest system lands. The MOU was updated in 2008 and the Forest is still committed to the objectives described. The first objective is to protect all genetically pure populations. The second objective is to protect all populations that are only slightly introgressed (90 percent pure). The third objective is to recover cutthroat trout in several large watersheds (at least 50 miles of habitat) across the state.

1976 National Forest Management Act

Under the National Forest Management Act of 1976 (NFMA), the Forest Service is charged with maintaining the viability of all existing native and desired non-native vertebrate species in a planning area (36 CFR 219.20). A forest plan must identify “management indicator species” (MIS) that serve as proxies for fulfilling this NFMA viability requirement. Westslope cutthroat trout is the MIS for fisheries on the Helena National Forest. The regulations impose a standard by requiring habitat objectives to be established for maintaining viability of MIS throughout a planning area.

Fish and Wildlife Conservation Act of 1980

It is the purpose of this act to provide (1) financial and technical assistance to the states for development and implementation of conservation plans and programs for nongame fish and wildlife; and (2) to encourage all federal agencies and departments to utilize their statutory and administrative authority, to the maximum extent practicable, to conserve and promote conservation of nongame fish and wildlife and their habitats.

Helena National Forest Plan

Direction for fisheries management under the Helena National Forest Plan emphasizes “maintenance or enhancement” of cold-water habitat and water quality to meet the needs of fisheries, (Forest Plan pp. II-1 and II-4). The general forest wide standard (p. II-22) states: “Maintain quality water and habitat for fish by coordinating activities and by direct habitat improvement.”

Fisheries research and investigations focus on the pervasiveness of excessive sediment generated by human (anthropogenic) activities in mountain watersheds. The major threat to fish is to their reproductive success and loss of rearing habitat. The ultimate objective for fisheries management is to promote effective management of sediment inputs to streams to preserve biological productivity. Any in-stream work must provide maximum protection of spawning habitat and not impede upstream fish migration.”

Especially pertinent to travel planning projects are the road standards; page II-30, road management standards on pages II-30 and II-31, and road maintenance standards on page II-32, the Plan states, “Unacceptable damage to soils, watershed, fish, wildlife, or historical/archaeological sites will be mitigated by road restrictions or other road management actions as necessary. Forest specialists representing soils and watershed shall provide input to the road maintenance planning process to verify standards, identify rehabilitation needs, and designate roads that should be permanently closed for resource protection." Although no standards for sediment were established, the monitoring section of the Forest Plan called for evaluation of intra-gravel sediment from 30 stream sections annually to ensure spawning habitat quality is being maintained.

In riparian areas, page II-35 of the Forest Plan specifies, "wet meadows and wet areas are closed to OHV use. Construction of roads will avoid stream course encroachment and channelization, including the avoidance of all riparian areas except to cross them." In addition, the Plan states, "the Forest will provide for vegetative cover adjacent to streams to serve as a filter strip for sediment and maintain optimum water temperatures, as well as provide large debris for long-term in-stream fish cover and pooling." For stream crossings, Plan standards call for stream crossing structure design that allows free water flow and fish passage.

The Helena Forest Plan was amended on August 30, 1995 by the Inland Native Fish Strategy (INFISH) (USDA Forest Service 1995). This interim strategy was designed to provide additional protection for existing populations of native trout, outside the range of anadromous fish, on 22 National Forests in the Pacific Northwest, Northern and Intermountain Regions. Implementing this strategy was deemed necessary as these species were at risk due to habitat degradation, introduction of exotic species, loss of migratory forms and overfishing. As part of this strategy, the Regional Foresters designated a network of priority watersheds. Priority watersheds are drainages that still contain excellent habitat or assemblages of native fish, provide for metapopulation objectives, or are watersheds, which have excellent potential for restoration. Copper Creek, in the Blackfoot River drainage is the priority watershed on the Lincoln Ranger District.

INFISH also established Riparian Management Objectives (RMOs) and Riparian Habitat Conservation Areas (RHCA). RMOs are habitat parameters that describe good fish habitat. Where site-specific data is available, these RMOs can be adjusted to better describe local stream conditions. These RMOs for stream channel conditions provide the criteria against which attainment or progress toward attainment of riparian goals is measured. RHCAs are portions of watersheds where riparian dependent resources receive primary emphasis. The RHCAs are defined for four categories of stream or water bodies dependent on flow conditions and presence of fish. The RHCAs are areas within specific management activities are subject to standards and guidelines in INFISH in addition to existing standards and guidelines in the Helena Forest Plan. Especially pertinent to this travel plan project are the INFISH standards required for roads; specifically standards for road management RF-2 (c3, c4, c5, c6, and c7 as well as RF-2d) and RF-3; especially RF3c. These standards are in addition to and reinforce Forest wide standards discussed for road related activities on pages II-30 to II-32 of the Helena Forest Plan to help ensure risk to native fishes are minimized.

A biological assessment has been prepared for this project and provides more detailed analysis of effects to aquatic TES species, including compliance with laws and regulations for these species. The Aquatic Habitat and Species Report (Rief 2014) provides additional details on applicable laws and regulations. Appendix A provides more detail regarding how the alternatives comply with direction in the Forest Plan.

Heritage (Cultural Resources)

Affected Environment

Introduction

The prehistory and history of the Helena National Forest, including the Blackfoot travel planning area are described in a variety of academic reports, cultural resource management overviews, and local historical sources and is therefore not repeated in detail here.

Briefly, archaeological research, ethnographic data, and tribal oral tradition confirm that American Indian peoples have occupied or used the upper Blackfoot River Valley of southwestern Montana for thousands of years. Prior to Euro-American settlement and during the historic period, Indian groups living in what would become Idaho and western Montana made seasonal trips over the Continental Divide Range at Rogers, Lewis and Clark, and other mountain passes en route to hunt bison, trade, socialize, and raid on the Montana plains. After ca. 1720 A.D., these seasonal journeys were facilitated by horse-drawn travois, which transported supplies, hides and meat. As a result of these treks, Indian trails became equestrian thoroughfares or, quite literally, “roads”. The upper Blackfoot River Valley area was also used for hunting, wild plant food collecting, tool stone quarrying, and other cultural activities. Today, the Salish, Kootenai, Blackfeet, Shoshone, and other tribes attach cultural significance to archaeological sites found throughout the Blackfoot travel planning area.

A portion of the Blackfoot travel planning area lies within the Alice Creek Historic District, which was listed on the National Register of Historic Places on June 6, 2007. The National Register is the Nation’s official list of historic properties worthy of preservation. The district contains prehistoric and historic resources that indicate the area has been a major travel corridor for at least 5,000 years. The resources include trail segments of the Cokahlarishkit (“road to the buffalo”), associated cultural features such as scarred trees, rock cairns, various archaeological sites, and a distinct historic landscape. This corridor followed the most advantages route through the drainage and basin, across the Lewis and Clark Pass and the Continental Divide, and into the plains of central Montana. The cultural resources of the district are intricately tied to this transportation corridor and show a consistency of land use dictated by the historic landscape.

The Euro-American settlement of the upper Blackfoot River valley mirrors that of Montana in general. The Lewis and Clark Expedition of 1804-1806 gave way to fur trapping and trading, then early military expeditions and railroad route explorations. A gold strike in Abe Lincoln Gulch near present day Lincoln brought permanent settlement. Nearby placer mining in Jefferson, Nevada and Washington Creeks attracted more people who eventually established small communities that were supported by mining, farming, ranching and logging. Early in the 20th Century, federal administration of mountain forests and surrounding lands, and increased public participation in outdoor recreation, added other dimensions to this rural lifeway. This natural resource and tourist-oriented economy still characterizes the sparsely populated upper Blackfoot River valley.

The prehistory and history of the Blackfoot travel planning area is best described as a lengthy, multi-layered story that spans thousands of years. The distinct period of significance is the period from 5,000BP to 120BP, (3,000 B.C. to A.D. 1842) which spans the prehistory, the 1805-1806 timeframe of Lewis and Clark and the Corps of Discovery, and 1841-1842, which marks the beginning of the Jesuit Missionary presence in western Montana.

Some key features of the heritage resources record within the analysis area include:

- The Blackfoot travel planning area encompasses the Cokahlarishkit/Lewis and Clark Trail (24LC1210), which extended through the upper Blackfoot Valley and over the Continental Divide into central Montana. Called the “River of the Road to the Buffalo” by the Salish and other American Indian groups, this ancient travel route undoubtedly accounts for some (but not all) of the prehistoric (archaeological) properties within the analysis area.
- The Salish Tribe has identified (through the efforts of tribal elders, tribal historic preservation office, and Salish Culture Committee) various geographical areas and landmarks within the upper Blackfoot River drainage that are culturally important. These have Salish place-names that are associated with families and events in traditional Salish life. This place-name information is highly regarded and confidential but may come to bear in future consultations regarding projects that are generated by this analysis.
- The later settlement of the greater Lincoln community is also reflected by homestead entries, mining claims, access roads, utility corridors, dispersed recreation sites and other evidence. This history has been little researched or documented by the Helena National Forest but the Upper Blackfoot River Valley Historical Society members have been very active in identifying and recording this history.

A total of 145 cultural resources are currently identified within or near roads and trails in the Blackfoot travel planning area. The historical or scientific value of many cultural resources in the analysis area has not been determined. The exceptions are historic mines, which have been the focus of Natural Historic Preservation Act (NHPA) Section 106 compliance for mine reclamation work and the Alice Creek Historic District nomination for the National Register of Historic Places. For purposes of this NEPA analysis, all identified cultural resources are treated as eligible (significant) for listing in the National Register of Historic Places, in accordance with FSM 2363.22.

Environmental Consequences

Methodology

Assumptions

We assumed that GIS maps showing known cultural resource distributions and existing inventory (field survey) data, provide an adequate means of assessing the general effects of the four travel plan alternatives on cultural resources.

The 2001 Tri-State OHV plan describes a range of OHV impacts to cultural resources on public lands across Montana. These data are largely anecdotal rather than quantitative, and no attempt was made to compare OHV damage to cultural resources with other recreational and non-recreational activities, such as horseback riding, livestock grazing or minerals exploration. Still, it is apparent from this data that cultural resources common to the Helena National Forest are similarly exposed and vulnerable to OHV travel. Specifically, OHVs cause compaction, rutting, erosion and other disturbances atop cultural resources. They are able to access otherwise remote areas, and leave archaeological and historic ruins exposed to the effects of uncontrolled riding, vandalism, artifact-collecting and theft. Therefore, this analysis assumes that motorized recreation has the potential to cause similar impacts to cultural resources on the Helena National Forest. It also assumed that non-motorized recreation (i.e., hiking, biking, and horseback riding) has lesser capacity to cause similar damage to cultural resources.

Information Used

For this analysis, we relied on cultural resource inventory data and site records on file at the Helena National Forest (HNF) Supervisor's Office. These data were generated through project- and reconnaissance-level field inventories completed from 1979 to 2013. Cultural resource site and inventory records are contained in Infra, GIS and hard copy records at the HNF Supervisor's Office and the Montana State Historic Preservation Office.

Background context for the planning area are available in various archaeological and historical documents pertinent to the Blackfoot Valley areas (i.e., Beck 1989; Knight 1989).

Methodology

For the purpose of this analysis, the cumulative effects project boundary is used as the general "heritage analysis area" where contextual research and background record checks provide the information on the existence of or potential for, the occurrence of cultural resources. Within this heritage analysis area, a site specific "area of potential effect" (APE) is intensively analyzed under NHPA Section 106 review process. The APE includes roads and trails with a 600-foot buffer zone. Where a cultural resource site is partially located within the APE, the effects analysis must be expanded to encompass the entire site. The exception is linear features (such as historic ditches or trails), where the majority of the feature is well outside of the planning area. Only the portion of the linear feature that is within the APE would be addressed for the Blackfoot Non-Winter Travel Plan.

This analysis focuses on cultural resources identified within the Blackfoot travel planning area. We used GIS data layers, currently known distribution of cultural resources as identified during previous project inventories, laid atop the road and trail system proposed under each alternative to determine where there were overlaps. Cultural resource size and boundary data are not always precise, particularly in absence of intensive surface investigation and mapping (historic sites) or subsurface testing (archaeological sites). For this reason, GIS analysis identified all sites within 600 feet of the roads and trails in each alternative.

Approximately 50 percent of the identified cultural resources in the Blackfoot travel planning area are either bisected by, or lie within, 100 feet or less of existing road and trails. These cultural resources could be directly affected by closures, seasonal restrictions, or permanent road use and maintenance. For example, a road built through an ancient Indian camp exposes stone artifacts, bone debris, fire hearths, and other archaeological evidence in its tread, ultimately destroying their context. Context in archaeology refers to the relationship that artifacts have to each other and the situation in which they are found. This context is what allows archaeologists to understand the relationship between artifacts on the same site, as well as how different archaeological sites are related to each other. Further, a road that originated as a result of mining activity may be surrounded by dilapidated buildings and features.

The remaining cultural resources are located at further distances (100-600 feet) from existing roads or trails. These could be indirectly affected by road and trail use or closure. Specifically, these routes provide access to cultural resources and thus invite vandalism, artifact collecting, arson, and other resource-depreciative behaviors.

The effects of the Blackfoot Travel Plan on cultural resources were evaluated on this basis:

- Permanent effects to cultural resources from road and trail closures in each alternative
- Effects to cultural resources from road and trail operations and management

On-the-ground compliance surveys of every road and trail closure or new construction proposed in the project alternatives were not completed. Closed roads and trails that are proposed for reclamation will require NHPA Section 106 compliance reviews since they may be: 1) historic in origin; 2) linked to a significant cultural resource; or 3) contain an exposed historic or prehistoric archaeological site within the roadbed or prism. Mitigation measures would need to be implemented to avoid causing harm to the roadbed itself or its associated cultural resources.

Past, Present, and Foreseeable Activities Relevant to Cumulative Effects Analysis

Appendix D has a list of past, present, and foreseeable activities considered for the cumulative effects analysis.

Effects Common to All Alternatives

In the Blackfoot travel planning area, 50 percent of the roads and trails often bisect prehistoric (American Indian) and historic archaeological sites, exposing artifacts in their tread. The exposed archaeological remains become highly visible and vulnerable to illegal collection, crushing by vehicles, erosion damage and other processes. Permanent closures have the potential to eliminate some of these problems.

Effects Common to All Action Alternatives

Implementing alternatives 2, 3 or 4 would reduce the amount of motorized travel on some routes. The proposed motorized route closures would be beneficial to cultural resources by preventing easy vehicle access to sensitive cultural resources which helps to abate vandalism and artifact theft. Reducing motorized routes available to the public within the Blackfoot travel planning area would restrict the public access to archaeological sites and historic ruins vulnerable to vandalism, artifact collecting and arson, and other depreciative behaviors. Cultural resources bisected by roads and trails are vulnerable to erosion and degradation caused by road maintenance and use. Further, some roads retain historical value by virtue of their linkage to specific cultural resource sites. Their permanent closure, and potential decommissioning, may diminish the historical value of some of these cultural resources. For example, historic mining buildings accessible by motorized routes in the Blackfoot travel planning area have been dismantled to obtain antique wood for various decorative uses such as in home remodeling and picture frames. Mining equipment, such as ore carts and old equipment parts, have found new homes as lawn and landscaping ornaments. Valuable artifacts are collected for sale in antique shows and on the Internet.

Fall to spring road and trail closures provide limited beneficial effects to cultural resources since public use of National Forest land diminishes during this time period and cultural resources are usually blanketed in snow or are otherwise inaccessible due to poor road conditions. However, once these roads are open from late spring through early fall, cultural resources become vulnerable to artifact collection, vandalism, arson, and other depreciative behavior.

At the same time, road and trail closures would limit opportunities for the public to visit interesting historic ruins, which is an important part of the recreational experience in the West. From a cultural resource perspective, road closures make investigation, protection, interpretation, and monitoring more difficult and costly.

Various cultural resources in the Blackfoot travel planning area are currently exposed in forest roads and trails. Road and trail improvements and maintenance continue to degrade some of these cultural resources by destroying their context, i.e. scientific data. Therefore, implementing any of the action alternatives would provide the opportunity to identify those cultural resource protection problems and identify best management practices in the Memorandum of Understanding for Road Maintenance between Heritage and Engineering.

Road closures would necessitate evaluation and implementation of closure methods, which could include road obliteration, ripping and seeding. Contingent on the targeted roads and OHV trails, this could have an adverse effect on cultural resources. The effect of this activity could be mitigated by using various closure methods in areas where cultural resources are currently exposed in road and trail beds. For example, road segments within identified archaeological sites could be buried with soil, as opposed to being ripped and seeded. As an outcome of road and trail closures, any future obliteration would require careful long-range planning to insure that cultural resource inventory, evaluation and treatment precede such undertakings (ground-disturbance), in accordance with Section 106 of the National Historic Preservation Act as amended.

Under all three action alternatives 2, 3, and 4, parking safely next to the side of a road within 30 feet from the edge of the road would be allowed. Parking next to the road means a person could still have a picnic, set up a campsite, ride their bicycle, hike, or do any other legal activity they do now. In addition, wheeled motorized vehicle travel for camping and parking associated with camping would be allowed within 300 feet of designated system routes, including roads and trails (unless signed otherwise or specifically closed) as long as:

- No new permanent routes are created by this activity
- No damage to existing vegetation, soil, or water resources occurs
- Travel off-route does not cross streams
- Travel off-route does not traverse riparian or wet areas
- Recreationalists will use the most direct route to disperse camp
- Recreationalists must select their site by non-motorized means

A portion of the Blackfoot Non-Winter Travel Plan planning area lies within the Alice Creek Historic District, which is listed on the National Register of Historic Places. Under 36 CFR 800.5 "…an adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualified the property for inclusion in the National Register in a manner that would diminish the integrity of the properties location, design, setting, materials, workmanship, feeling, or association." Examples of possible adverse effects to cultural resources from activities related to this travel plan process include, but are not limited to: noise, visual and direct physical impacts. Direct physical impacts would be addressed during Section 106 inventories conducted for this project.

Visual impacts to the Alice Creek Historic District and the Lewis & Clark National Historic Trail were addressed by assessing the roads proposed for motorized travel that are visible from key points within the district. The only visible road from these key points is the main Alice Creek road FS# 293. Therefore I feel there is no adverse effect in regards to visual impacts to the Alice Creek Historic District or the Lewis & Clark National Historic Trail.

Noise impacts are harder to determine when it comes to a Historic District and Trail. Human response to noise is subjective and can vary from person to person. Factors that can influence an individual response include loudness, frequency, and time pattern; the amount of background noise present before, and intruding noise, and the nature of the activity that the noise affects. The Alice Creek Historic District and the Lewis & Clark National Historic Trail are affected by noise in some way, whether it is ambient noise from wind in the trees, water flowing over rocks, or human-created noise from airplanes, motorized vehicles or the sounds of gunshots.

Noise levels are measured several ways, the most common measure being decibels A (dbA). Normal conversation measures around 60 dbA. The Federal Highway Act (FHWA) states, "… some motorcycles will test at over 100 dbA when standing 3 to 6 feet away. The interaction of sound waves with the ground often results in a decrease in 3 dbA or greater each time the distance is doubled. Noise carries differently in the natural environment depending on topography, vegetative cover, ambient conditions and snowpack. Flat terrain with little vegetative cover and crusty snowpack creates conditions for sound to carry longer distances then does terrain with more relief and vegetative cover."

Noise is regulated in Montana on public lands by Montana State Code 61-9-418. This law states, "… all motorcycles or quadricyles operated on streets and highways in the state shall be equipped with noise suppression devices at all times." Forest roads and trails are considered public ways under law, and are covered by this requirement. For any cycles manufactured after 1987, the decibel limit is 70 dbA, measured at 50 feet.

There are no significant stationary noise sources from human activities that have affected recreationists within the soundscape of the Alice Creek Historic District and the Lewis & Clark National Historic Trail. Short-term noise impacts to recreationists have occurred for many years, especially since the advent of motor vehicles. Recreationists seeking natural quiet within the Historic District or on the Historic Trail may find noise from motorized recreational vehicles to be an impact to the feeling of the historic landscape. From my 5 years of experience specifically on the Helena National Forest, I feel the noise associated with motorized recreation near the Alice Creek Historic District and the Lewis & Clark National Historic Trail is dispersed and temporal in nature with the effects being short term. Therefore I feel there is no adverse effect to the integrity of the Alice Creek Historic District and the Lewis & Clark National Historic Trail in regards to roads proposed for motorized use by this project.

Programmatic Forest Plan Amendments for Management Areas N1 and R1 and Big Game Security

Other actions that are part of this travel plan (e.g. the proposed Forest Plan Big Game Security Amendment and the Forest Plan R1/N1 Amendment) would not result in additional ground-disturbing activities and thus would have no effect on cultural resources within the Blackfoot Non-Winter Travel Plan planning area.

Alternative 1 – No Action

Direct and Indirect Effects

Alternative 1 falls under the purview of the 2001 Tri-State OHV Decision and would continue to prohibit cross-country travel. It provides the same level of protection to the cultural resources base within the travel plan area as currently exits. The numerous open roads and trails provide ample access to cultural resources for purposes of monitoring, scientific investigation and potential interpretation, which is a beneficial effect.

Under the existing condition, alternative 1, the 2001 Tri-State Decision allowed off-vehicle camping within 300 feet of roads and trails; but, required visitors to select camp sites by non-motorized means and access the campsites by the most direct route causing the least damage. Parking safely next to the side of a road within 30 feet from the edge of the road is also permitted under the existing condition.

A total of 145 cultural sites are bisected by, or are adjacent (within 600 feet) to roads and trails under this alterative. Road maintenance has the potential to degrade cultural resources that are intersected by roads in the Blackfoot travel planning area that have not been identified in the Memorandum of Understanding for Road Maintenance between Heritage and Engineering.

The existing condition protects many vulnerable cultural resources by confining motorized travel to designated routes. It would preclude the opportunity to further protect cultural resources that may currently be vulnerable to vehicle traffic, artifact collecting and natural deterioration in undesignated routes.

Since no actions associated with this project would occur, there would not be a need to inventory the planning area. Therefore, additional cultural resources data would not be realized.

Cumulative Effects

This alternative is the existing condition and does not improve cultural resource protection in the Blackfoot travel planning area. Past, present and reasonably foreseeable future actions relevant to this analysis are described in appendix D. Those most relevant to cultural resources are described below.

Past Actions – The Upper Blackfoot Valley and adjacent foothills and mountains has supported livestock grazing, logging, mining, recreation and utility development during the last 140 years. These activities and particularly the road construction associated with them, have exposed and in some cases damaged cultural resources. However, it is difficult to quantify the effects of these past actions on cultural resources in the Blackfoot travel planning area.

Since the late 1970s, cultural resource inventories have preceded all ground-disturbing Forest Service projects in the Blackfoot travel planning area including vegetation treatments, livestock grazing, restoration, and recreation development. We discovered the majority of the cultural resources described in this travel plan analysis as a result of these compliance inventories. We found many archaeological sites because they were exposed in old road and trail beds. In most cases, we would reconfigure project boundaries and treatments to avoid impacting significant cultural resources; therefore, the cumulative effect of these actions on cultural resources would be relatively minor.

Present Actions – Cultural resource inventory and evaluation has preceded restoration work—fencing, weed treatment, road and trail repairs, reforestation and stock watering repairs. Ongoing forest activities would continue to have a cumulative effect on cultural resources. All forest actions require NEPA and consultation; therefore the effects on cultural resources would be mitigated through project redesign or avoidance. Roads and trails have been constructed through archaeological and historic sites over a period of many years. Regardless of alternative, road use has the potential to degrade cultural resources, particularly prehistoric archaeological sites. Cultural resources exposed in roadbeds and borrow pits invite illegal artifact collecting.

Reasonably Foreseeable Future Actions – Future actions in the analysis area focus on public safety and environmental health and include fire and watershed restoration, hazardous fuels reduction, abandoned mine reclamation, and minor recreation developments, and mineral operations. In all likelihood, the effects of these projects on cultural resources can be mitigated through project re-design and avoidance.

Summary of Effects

Alternative 1 is the existing condition. This alternative would continue to provide the maximum number of motorized roads and trails and thereby presents the greatest amount of risk to cultural resources of the four alternatives. By the same token, it would allow the greatest opportunity to visit historic sites for educational and recreational purposes.

Alternative 1 would continue to implement the 2001Tri-State OHV Decision by prohibiting cross-country travel and confining motorized travel to designated routes. It does not increase protection of cultural resources by closing numerous open roads and trails but it does provide ample access to cultural resources for purposes of monitoring, scientific investigation and potentially interpretation.

Alternative 2

Project Design Features

Project design features specific to cultural resources are listed in chapter 2 starting on page 43. These design features apply to alternatives 2, 3 and 4.

Direct and Indirect Effects

Roads and trails under this alternative bisect or are adjacent (within 600 feet) to 68 cultural resources. Alternative 2 would close additional miles of unclassified and National Forest System roads and trails to wheeled vehicles that pass closely or directly through 41 identified cultural resources. Permanent closures would protect these cultural resources from ongoing damage by continued wheeled vehicle traffic and public use, and be a beneficial effect. At the same time, permanent closures would constrain public access for purposes of agency or agency-authorized scientific investigation, monitoring and protection-related activities. It may also limit access by forest visitors who enjoy visiting and photographing historic ruins on public lands as a recreational and educational experience.

Alternative 2 would improve cultural resource protection over alternative 1 by decreasing road access across the Blackfoot travel planning area. This, in turn, would reduce cultural resource exposure to artifact collecting, vandalism and other depreciative behavior.

Cumulative Effects

This alternative improves cultural resource protection in the Blackfoot travel planning area in the short and long term. Implementing alternative 2, in combination with other past, present and reasonably foreseeable future actions would result in the same cumulative effects as described for alternative 1.

Prehistoric and historic properties are non-renewable resources. They represent a resource base that cannot be replenished. In this sense, all effects are cumulative and work to reduce the archaeological/historic record. Road construction and use, mining activities, historic timber harvest, fires and suppression, grazing and range developments, and other developments or reclamation have the potential to directly affect cultural resources by reducing the quality or quantity of sites due to disturbances or obliteration. A list of past, present or reasonably foreseeable future actions is in appendix D.

This alternative has the potential to improve cultural resource protection in the Blackfoot Non-Winter Travel Plan planning area. If this alternative was selected then cultural resources within the planning area could be evaluated for the National Register of Historic Places, nominated to the register (if eligible) and managed in such a way as to prevent adverse effects.

Summary of Effects

Alternative 2 would provide added protection benefits to cultural resources when compared to alternative 1 due to the closure, storage and decommissioning of roads while still providing reasonable access opportunities for people to visit historic ruins for educational and recreational activities.

Alternative 3

Direct and Indirect Effects

Roads and trails under this alternative bisect or are adjacent (within 600 feet) to 90 cultural resources. Alternative 3 would close additional miles of unclassified and National Forest System roads and trails yearlong to wheeled, motorized vehicles that pass closely or directly through identified cultural resources. These various closures would benefit cultural resources by limiting public access. At the same time, permanent closures would constrain access for purposes of agency or agency-authorized scientific investigation, monitoring and protection-related activities.

Alternative 3 would improve cultural resource protection over alternatives 1 and 2 by decreasing road access across the Blackfoot travel planning area. This, in turn, would reduce cultural resource exposure to artifact collecting, vandalism and other depreciative behavior.

Cumulative Effects

This alternative improves cultural resource protection in the Blackfoot Non-Winter Travel Plan planning area in the short and long term. See alternative 1 in a previous section for a description of past, present and reasonably foreseeable future actions.

Prehistoric and historic properties are non-renewable resources. They represent a resource base that cannot be replenished. In this sense, all effects are cumulative and work to reduce the archaeological/historic record. Road construction and use, mining activities, historic timber harvest, fires and suppression, grazing and range developments, and other developments or reclamation have the potential to directly affect cultural resources by reducing the quality or quantity of sites due to disturbances or obliteration. A list of past, present or reasonably foreseeable future actions is in appendix D.

This alternative has the potential to improve cultural resource protection in the Blackfoot Non-Winter Travel Plan planning area. If this alternative was selected then cultural resources within the planning area could be evaluated for the National Register of Historic Places, nominated to the register (if eligible) and managed in such a way as to prevent adverse effects.

Summary of Effects

Alternative 3 would result in more protection benefits to cultural resources when compared to alternative 1 and 2 due to the closure, storage and decommissioning of the most roads while still providing reasonable access opportunities for people to visit historic ruins for recreational and educational activities.

Alternative 4

Direct and Indirect Effects

Roads and trails under this alternative bisect or are adjacent (within 600 feet) to 68 cultural resources. Alternative 4 would close additional miles of unclassified and National Forest System roads and trails yearlong to wheeled motorized vehicles that pass closely or directly through 55 identified cultural resources. These various closures would benefit cultural resources by limiting public access. At the same time, permanent closures would oblige access for purposes of agency or agency-authorized scientific investigation, monitoring and protection-related activities.

Alternative 4 would improve cultural resource protection over alternatives 1, 2 and 3 by decreasing road access across the Blackfoot Non-Winter Travel Plan area. This, in turn, would reduce cultural resource exposure to artifact collecting, vandalism and other depreciative behavior.

Cumulative Effects

This alternative improves cultural resource protection in the Blackfoot Non-Winter Travel Plan planning area in the short and long term. See alternative 1 in a previous section for a description of past, present and reasonably foreseeable future actions.

Prehistoric and historic properties are a non-renewable resource. They represent a resource base that cannot be replenished. In this sense, all effects are cumulative and work to reduce the archaeological/historic record. Road construction and use, mining activities, historic timber harvest, fires and suppression, grazing and range developments, and other developments or reclamation have the potential to directly affect cultural resources by reducing the quality and/or quantity of sites due to disturbances or obliteration. A list of past, present or reasonably foreseeable future actions is in appendix D.

This alternative has the potential to improve cultural resource protection in the Blackfoot Non-Winter Travel Plan planning area. If this alternative was selected then cultural resources within the planning area could be evaluated for the National Register of Historic Places, nominated to the register (if eligible) and managed in such a way as to prevent adverse effects.

Summary of Effects

Of the four alternatives, alternative 4 would have the most beneficial effect to cultural resources.

Compliance with Forest Plan and Other Relevant Laws, Regulations, Policies and Plans

The Forest Plan requires the integration of cultural resources in project planning and forest management. Compliance inventory, evaluation of site significance and project effect, consultation with the Montana State Historic Preservation Office and Tribal Historic Preservation Officers, and implementation of design features for project activity-affected cultural resources would comply with the National Historic Preservation Act and its implementing regulations in 36 CFR 800, as well as Helena National Forest Plan (1986) standards and guidelines. Therefore, the results of this travel planning on cultural resources would remain within Forest Plan standards because NHPA Section 106 would be completed prior to implementation, and mitigation would be applied to avoid adversely effecting cultural resources within the Blackfoot travel planning area.

For more details on compliance with the Forest Plan, see appendix A in this document. For more details on compliance with other regulations and policy, see the Heritage Report (Randall 2013) in the project record.

Conclusions

The Blackfoot Non-Winter Travel Plan planning area contains a variety of cultural resources. Overall, travel planning would have a beneficial effect on cultural resources. Alternative 1 essentially implements the State OHV Plan by eliminating cross-country travel and confining motorized travel to designated routes. It does not increase protection of cultural resources by closing numerous open roads and trails; however it does provide ample access to cultural resources for purposes of monitoring, scientific investigation and interpretation.

The action alternatives would benefit cultural resources over alternative 1. Alternative 2 would close the least amount of roads and trails. Alternative 4 would close the most out of all of the action alternatives, so would benefit cultural resources more than alternatives 1, 2 and 3.

Road closures and other proposed actions that lead to ground disturbance, obliteration (ripping, seeding), or new road or trail construction or reconstruction would require field inventory for cultural resources to comply with NHPA Section 106, NEPA and Forest Plan standards. A phased approach under the Heritage Programmatic Agreement (PA) with the Montana State Historic Preservation Office (MT SHPO) would require consultation prior to approval. The project design feature section of chapter 2 describes these non-discretionary features necessary to minimize effects to cultural resources.

GIS analysis was used to identify all sites within 600 feet of roads and trails under each alternative. A 600 foot analysis also takes into account wheeled motorized vehicle travel allowed within 300 feet of designated system routes (unless signed otherwise), including roads and trails for dispersed camping as proposed under all action alternatives. This wheeled vehicle travel would be allowed as long as; (1) No new permanent routes are created by this activity; (2) no damage to existing vegetation, soil or water resources occurs; (3) travel off-route does not cross streams; and (4) travel off-route does not traverse riparian or wet areas.

The proposed Forest Plan Big Game Security Amendment and the Forest Plan Management Areas R1 and N1 Amendment and would have no effect on cultural resources within the Blackfoot travel planning area because they would not result in any new ground disturbance.

Irreversible and Irretrievable Commitments

Removal or disturbance of previously identified or unidentified cultural resources would result in irreversible and irretrievable loss of data. However, there would be no irreversible or irretrievable effect to cultural resources as a direct result of implementing this travel plan since all known archaeological sites would be avoided and not disturbed. Indirectly travel management may increase public access, and as a consequence, enhance opportunities for artifact collecting and vandalism. Travel management, especially road decommissioning, may inadvertently expose previously undiscovered prehistoric or historic sites destroying their context. Context in archaeology refers to the relationship that artifacts have to each other and the situation in which they are found. Every artifact found on an archaeological site has a precisely defined location. In addition, it is possible that exposed artifacts and/or features would be observed and not reported to the Forest Service, thus providing opportunities for future artifact collecting and vandalism. When people remove an artifact without recording its precise location the context is lost forever and the artifact has little or no scientific value. This context is what allows archaeologists to understand the relationship between artifacts on the same site, as well as how different archaeological sites are related to each other.

Livestock Grazing and Minerals

Livestock Grazing

There are 15 livestock grazing allotments on the Lincoln Ranger District and within the Blackfoot travel planning area. There are four allotments north of Highway 200, and the rest of the allotments are south of Highway 200. These allotments are occupied at various times of the year, but the most consistent months are June, July, August and September. During these months inspections are done in a consistent pattern, starting with pre-inspections (before cows are allowed on the allotment) and ending with post- inspections (after the cows come off the allotments). All of these allotments have access roads. Table D-1 lists each allotment, the 5th hydrologic unit code (HUC) it occurs in, and the acres of the allotment and road miles occurring within each HUC 5. Primary access to each allotment is as follows:

- Alice Creek - Alice Creek Road (FR 293)
- Arrastra Creek - Arrastra Creek Road or the road into Patterson Prairie (both private roads)
- Keep Cool Liverpool, Canyon Creek and Horsefly - Sucker Creek Road (FR 1800); North Fork of Keep Cool Road (FR 1821); Horsefly Creek which (private road); Black Diamond Road (FR 4113)
- Chimney Creek - Nevada Ogden Road (FR 1163) and FR 1803
- East Shingle Mill - located off Highway 141 and is only accessed through private lands
- East Nevada - Nevada Creek Road (FR 296), Washington Creek Road (FR 4196), and Jefferson Creek Road (FR 1894 off the Dalton Mountain Road (FR 4195)
- Gould Creek - Gould Creek Road and the Fools Hen Creek Road (FR 1848)
- Marsh Creek - Marsh Creek Road (FR 485)
- Moose Creek - Nevada Ogden Road (FR 1163) and FR 1823 and 1893
- Poorman/Willow - Dalton Mountain Road (FR 4195) and Sauerkraut Roads (FR 329, 4135 and 1892)
- Stonewall - Beaver Creek Road (FR 4106), Park Creek Road (FR 607), Stonewall Creek Road (FR 607 E1), and Lincoln Ditch Road
- Tarhead - access through private and BLM lands
- West Nevada - Dalton Mountain Road (FR 4195), the Buffalo Gulch Road (FR 1830), the Madison Gulch Road (FR 1829), the Shelton Road (FR 1822) and various other roads such as FR 1822, 1833, 1891, 1837 and the Deer Creek Road (FR 1830)

None of the alternatives would result in measurable changes to the primary access routes into these allotments, therefore, livestock grazing is not discussed further in this document and the focus of the rest of this section is on minerals.

Minerals

Administration of mineral permits includes evaluating proposals submitted by the mining applicant, coordination and preparation of NEPA analysis, mitigation measures, negotiation for modifications with the miner if needed, calculating bond and processing approval NEPA and Decision letters for the District Ranger or Forest Supervisor.

Affected Environment

We have identified known mineral resources in the Blackfoot travel planning area including historic mining districts. The most comprehensive assessment of mineral resources is the 1996 U.S. Geological Survey Open File Report 96-683-A (Tysdal et al. 1996), which includes a compilation of references, samples and maps of mineral resource occurrences. We also reviewed staff knowledge and district files pertaining to the planning area and known concentrations of active mining claims.

There are three substantial ore bodies located within the travel planning area: 1) the Heddleston copper-molybdenum porphyry, 2) Seven Up Pete epithermal deposit intrusive-extrusive rocks in Seven Up Pete Gulch, and 3) the McDonald Gold epithermal deposit in volcanic rocks in the Landers' Fork of the Blackfoot River. All of these mineral deposits occur primarily on private land, however access near or through National Forest System lands (NFS) may be needed to develop the deposit.

Locatable minerals

Mineral activities tend to occur in areas of historic mining. Most areas have patented and unpatented mining claims in their vicinity. Actual mining project sites often change but the areas of interest tend not to. Table 44 shows areas with substantial current or recent (last 20 years) locatable mineral project proposals, unpatented mining claim activity and known mineral deposits (*see also Map 1 in the Minerals Specialist Report in the project files*).

In addition, the Lincoln Ranger District has other ongoing small-scale locatable minerals projects that have a Notice of Intent (NOI) or have been authorized with a plan of operations. Table 44 is a summary of these projects by project name, location and size of disturbed area. More detailed descriptions of the projects are found in the 2810 Locatable minerals project files at the ranger district offices.

All of these planning areas on NFS lands have resulted in less than 2 acres of disturbance per site with the exception of the Beaver #1-#3 project in Lincoln Gulch (approximately 5 acres), and the Pardner project in American Gulch (approximately 3 acres). All of these planning areas have low levels of prospecting use, and there has been no recorded production from any of these lode or placer mines in the last 20 years. The recent spike in the price of gold could result in increased interest in prospecting activity by small scale parties and potentially an increase in interest by larger gold mining entities. The most likely areas for larger gold exploration activities are the Virginia-Gould Creek area and the Seven-Up Pete area. The Upper Blackfoot River area hosts a relatively large porphyry copper-molybdenum deposit on federal and private lands.

Locatable mineral activities are occurring primarily on the open-route system in the planning area; but we have observed some activity on private land and in areas of closed roads. However, closed roads in general are a barrier to mineral prospecting activities as the equipment and tools utilized during prospecting ventures are heavy and it makes walking great distances largely unfeasible. Decommissioned roads would make most levels of mineral activity impractical.

Mineral Materials

Mineral material activities include development of localized borrow pits by the Forest Service for road maintenance, and hand-scale extraction of various rock types by the public primarily for decorative building purposes. Forest Service borrow pits are generally small (less than 0.25 acre) and most have been reshaped and closed.

Leasable Minerals

We conducted a Forestwide analysis for oil and gas leasing and completed an EIS for this project in 1998. We made portions of the Blackfoot travel planning area available for lease, and leases were issued in 2000 for the area east of Landers' Fork and Highway 279. These leases expired in 2010. We have not received subsequent requests for oil and gas leases in the planning area. There has been no analysis of geothermal leasing in the planning area. The State of Montana has leased numerous State sections near NFS lands; particularly east of Rogers' Pass. Proposed activity on these leases could result in requests for access across NFS lands.

Abandoned/Inactive Mine and Reclamation Areas

There are numerous inventoried abandoned mine sites in the planning area and some reclamation is occurring. We worked with the State of Montana in the early 2000s to reclaim about 10 acres in the Washington Gulch area that was impacted by placer mining activities on private and NFS lands. We expect some additional reclamation would be needed in this area based on the investigation results in the site inventories, and the results of the Total Maximum Daily Load (TMDL) prepared by the State of Montana for this watershed. Reclamation work would be reliant on availability of funding.

The Mike Horse Dam/Upper Blackfoot Mining District Complex is a State CECRA (state superfund) area and includes several mines on NFS lands as well as the Mike Horse dam, an unstable feature. We are working with the State of Montana to reclaim this area as part of an environmental settlement with a now bankrupt mining company. As part of reclamation, road improvements were made to the Meadow Creek road to the Mike Horse dam in 2010. Additional temporary road construction may occur in the planning area to facilitate these reclamation activities.

The decision for the upcoming reclamation of the Mike Horse dam and its associated wastes in the Upper Blackfoot Mining Complex area was originally made in July, 2007 and amended in September 2011. This project is authorized under CERCLA. It will be conducted over a period of 7-10 years starting in 2010 with the construction of a planning area haul access road. Generally, the need for construction of access and haul roads was included in the analyses for this project. However, site specific road needs are currently being developed in the design-level planning for the project. Because of the scale, complexity and need to ensure public safety during this project, most of the roads on NFS lands in this area will not be available for public use during the primary construction years, regardless of the decision on this travel plan.

Environmental Consequences

The direct and indirect effects to locatable minerals as a result of implementing alternatives 2, 3 or 4 is described below by two indicators : (1) Effect of the action alternative on motorized access to a known mineralized area as identified in table 44 and table 45 (change in open motorized routes), and (2) Effect of the action alternative on motorized access to a currently permitted project as identified on table 44. Closure of roads needed to access current and potential mineral operations would be an adverse impact because additional regulatory process steps would be necessary in order to allow use on these closed roads to conduct mineral activities in these areas. An explorationist or miner would have to make contact with a minerals administrator, submit a plan of operation proposal and wait for review and authorization before utilizing the closed road as opposed to not having to do these steps for a project using an open road. The extra time needed and associated costs are an additional burden to get work accomplished during an already limited mountain field season. In the end, a negative change in motorized access to a mineral project or resource area would result in additional time and expense on the part of the mineral company to conduct activities.

This analysis does not consider effects to mineral material sites as these resources are usually utilized by the agency for road maintenance activities. Their use is opportunistic based on road needs. This analysis will not consider effects to oil and gas activities as there are none proposed and there are currently no leases.

This analysis does not consider effects of the travel planning action alternatives in a general sense on mine reclamation activities or the maintenance and monitoring of completed projects. These large-scale projects would have their own site-specific analysis including any needed road improvements and decommissioning as part of the project, which would be managed under a separate NEPA decision or process.

Methodology

Much of the information presented in this analysis comes directly from review and administration of actual mineral permits, and inventory, monitoring and reclamation planning activities for the areas' abandoned/inactive mines. In addition, this analysis refers to the occurrence and development potential of mineral resources. Mineral potential information comes from the US Geological Survey report (Tysdal et al. 1996). A minerals specialist has conducted field inspections of various mineral operations in the planning area, and consulted the Forest minerals administrator on project activities.

Assumptions

Locatable mineral activities have been at low ebb since the early 1990s and new projects have been at the individual prospector/miner scale. Currently gold prices are at record highs and there is the always the possibility of industrial level exploration proposals in the near future. However, few gold exploration companies reside in Montana due to a State law banning the use of cyanide for new extraction processes and a perceived extreme regulatory environment by the mineral industry. The travel plan area is locally mineralized and could see a higher level of mineral activity in the next few years as long as gold prices remain high.

Mineral material activity would probably remain low as the resources within the Travel Plan area are not unique and are available widely. Decorative boulders or other building materials are a potential for new project proposals if the area sees an influx in new home construction. The Forest Service also develops localized rock sources for road maintenance and other projects. To date, there are a limited number of these types of developments and all are reclaimed to some extent.

For the purpose of this analysis, we assume that any closed road would require authorization prior to use of the road by a mineral permittee.

Information Used

Information used includes published mineral resources reference material, the Bureau of Land Management's lands records database (LR2000), Montana Bureau of Mines and Geology Inventory of Abandoned and Inactive mines in the Blackfoot and Little Blackfoot drainages (Metesh1999), the Abandoned Mine Reclamation Bureau's Priority Mine Sites Inventory (MDSL 1995), 2810 and 2850 project files from the Lincoln Ranger District and Forest Supervisors' Office, and BLM oil and gas lease records. The BLM also recently prepared an EIS for geothermal resources for the western United States which identified areas of potential geothermal resources. Lincoln Ranger District project files contain records of proposals and activities on National Forest System lands where mineral activities were larger than minor hand-scale operations. The 1998 Helena National Forest and Elkhorns Portion of the Beaverhead Deerlodge National Forest Oil and Gas Leasing EIS were also utilized for this analysis.

Spatial and Temporal Context for Effects Analysis

The minerals analysis area for direct, indirect, and cumulative effects is the same as the Blackfoot travel planning area.

Effects Common to All Alternatives

All alternatives include currently gated, closed roads which are passable by a wheeled motorized vehicle. Prospecting activity on closed but drivable roads is authorized by an approved plan of operations. A plan of operations requires review by the mineral administrator and approval by the District Ranger, at a minimum. For increasing project complexity and disturbance, a separate NEPA evaluation, public involvement and resources review may be needed the project.

Oil and gas activities, geothermal and salable mineral activities require separate NEPA analysis and authorization which would likely not change between the alternatives. Oil and gas activities are not discussed further as there are no proposals currently under consideration.

Programmatic Forest Plan Amendments for Big Game Security and Management Areas R1 and N1

The Forest Plan Big Game Security Amendment and Forest Plan Amendment for Management Areas N1 and R1 are a component of all action alternatives. These amendments would have no effects to mineral resources because they would not result in changes in current or future mineral access.

Alternative 1 – No Action

Direct and Indirect Effects

No changes to the existing transportation system would occur under implementation of alternative 1. Continuing to implement our current road and trail system and how this relates to currently permitted mineral projects is described in table 44. Locatable mineral operators and mineral material collectors currently have an established road system of drivable, open and closed roads that are available for use by a full size vehicle and this current access is considered adequate. Locatable mineral operators currently submit a plan of operation for using closed roads to access their mineral activity areas, if needed, even if they are not planning on doing any physical work. At a minimum, the plan form requires time on their part to fill out, and review and approval time by the Forest Service. Because of the relatively short operating season, project delays can result in loss of time to prospect and money to a mineral proponent. There are three recurring projects that are authorized this way and annually there may be several more minor projects authorized on closed routes. Under alternative 1, access to mineralized areas would not change.

Cumulative Effects

Taking no action to change the current transportation system, combined with the effect of implementing other past, present and reasonably foreseeable future actions (appendix D) would have minimal effect on mineral prospecting as most of these other actions are routine and recurring management activities. Routine road maintenance and road improvement projects on forest access routes helps facilitate mineral activities. In 2011, heavy snow and runoff conditions resulted in roads staying closed by snow longer as well as delays in road maintenance which negatively affected the ability of claimants to access their planning areas. These conditions are not predictable and are part of the unknowns of working in a mountainous environment.

The Helena Forests' Roadside Hazard Tree removal activities have the potential to facilitate mineral prospecting in the short term as vegetation removal provides an opportunity to see potential mineral resources. This beneficial effect would be short term as the understory vegetation would eventually thicken and negate the visibility provided during hazard tree removal.

Alternative 2

Project Design Features

There is no specific project design feature tied to the minerals resource. For a full list of project design features see chapter 2, page 42

Direct and Indirect Effects

Alternative 2 proposes to reduce the number of open, motorized routes that would be available for mineral prospecting and development activities. The Heddleston, Seven-Up Pete and Virginia-Stemple-Gould Creek areas would have reductions in the number of miles of open motorized routes. These reduced road densities would negatively impact explorationists as they would have to apply for and wait for authorization of a plan of operation to use a closed road for access into these areas (table 44). Alternative 2 would result in a direct, adverse impact to three currently permitted small-scale projects from changes in the motorized transportation system in these areas (two projects in Sauerkraut Creek and one near Poorman Creek (table 45). The Ranger District would work with the operator to mitigate these impacts in the short term by negotiating the timing of decommissioning or modify a local portion of the project.

Cumulative Effects

Combining the impacts of alternative 2 with other past, present and reasonably foreseeable future actions in the planning area are similar to those described for alternative 1. While alternative 2 would result in a reduction in designated open routes, this effect when combined with these other routine and recurring management activities would not result in measurable cumulative impacts.

Alternative 3

Direct and Indirect Effects

Alternative would have a greater adverse impact on access for mineral resource exploration and development activities than alternative 2. It proposes to reduce the designated NFS road system by approximately 50 more miles than alternative 2. This would adversely impact the Heddleston area more than alternative 2 as many of the routes in this area would be decommissioned. In addition, one primary access route to the Seven Up Pete area would be converted to a trail. However, a beneficial impact would result in the Seven-Up Pete area since a new designated route would be decommissioned in Lincoln Gulch, but the overall net reduction in drivable road miles would be relatively minor as this area has a dense network of open roads. Access to the valley bottom deposits in the placer gulches of Poorman, Willow, Sauerkraut and Stonewall would be the same as that described for alternative 2.

Implementing alternative 3 would result in adverse impacts to road access for three currently permitted projects where roads would be either decommissioned or converted to a non-motorized trail, including the Butterfly lode project and Horse Laugh placer projects in Poorman Creek and the Baldy Mountain lode in Humbug Creek. The Lincoln Gulch projects would need to be reviewed in detail with the claimants to make sure the resulting open routes would be adequate for access. The impact of road closures and decommissioning can be mitigated by working with the claimants on project timing and/or negotiating the closure as part of the mineral project; this has been identified as a project design feature for this project, as described in chapter 2. The road to the White Hope project would be open to motorized vehicles yearlong in this alternative.

Cumulative Effects

Combining the impacts of implementing alternative 3 with other past, present and reasonably foreseeable future actions in the planning area (appendix D) are similar to those described for alternative 1. While alternative 2 would result in a reduction in designated open routes, this effect when combined with these other routine and recurring management activities would not result in measurable cumulative impacts.

Alternative 4

Direct and Indirect Effects

Alternative 4 would have the greatest adverse impact to mineral resources exploration and development activities than either alternative 2 or 3. It proposes to reduce the system of designated open NFS roads substantially more than either of the other two action alternatives, and would result in fewer miles of drivable routes due to decommissioning. Alternative 4 would have a slightly greater adverse impact than alternatives 2 and 3 on current or potential mineral activities in the Heddleston area, as several routes in the upper Beartrap Creek area would be closed as part of this alternative. There would be adverse effects to the Cotter Creek mineralized area because about 15 miles of currently open road would be closed in Sections 1,2 11 and 12. There is one additional road closure under alternative 4 in Sections 28 and 29 (east of the patents in the Seven Up Pete area) that would occur in addition to the route changes from alternative 3. This would have adverse effects on mineral resources exploration and development activities in this area, which includes unpatented mining claims.

The proposed new motorized trail connector between trail 1825-C1 and 1841-A1 near the Seven Up Pete patents would have beneficial effects to mineral activities because it would provide motorized access to an area for some level of mineral exploration activity. The Lincoln Gulch area would have substantially fewer miles of drivable routes as about 8 additional road miles would be closed, compared to alternative 3. Several additional segments of road would be decommissioned in Lincoln Gulch. The net reduction in drivable road miles would be moderate as the area has a dense network of open roads. Motorized access to the placer mining area of Sauerkraut Creek would be greatly affected as all of the roads in this area would be closed in alternative 4.

Access to the valley bottom deposits in the placer gulches of Poorman, Willow, and Stonewall would be similar to alternatives 2 and 3. Several roads in the Granite Butte area (4133, U-4133A, U-4133B) would be closed and decommissioned resulting in about 4 fewer miles of motorized route available for exploration and development activities in a known mineralized area.

Three currently permitted projects would have adverse effects from implementation of alternative 4 because the routes to their planning areas are identified to be decommissioned or converted to a non-motorized trail, including the Butterfly lode project and Horse Laugh placer projects in Poorman Creek and the Baldy Mountain lode in Humbug Creek. The Lincoln Gulch projects would need to be reviewed in detail with the claimants to make sure the resulting open routes will be adequate for access. The impact of road closures and decommissioning can be mitigated by working with the claimants on project timing or negotiating the closure as part of the mineral project. The road to the White Hope project would be open to motorized vehicles yearlong in this alternative, which would be viewed favorably by some miners and negatively by the currently permitted miner in Beartrap Creek.

Cumulative Effects

Combining the impacts of implementing alternative 4 with other past, present and reasonably foreseeable future actions in the planning area (appendix D) are similar to those described for alternatives 1, 2 and 3. While alternative 4 would result in a reduction in designated open routes, this effect when combined with these other routine and recurring management activities would not result in measurable cumulative impacts.

Conclusions

The Blackfoot travel planning area is naturally mineralized with an extensive mining history.

Small locatable and mineral materials activities have occurred historically at high levels and more recently at a relatively low level in the planning area due to the intrinsic geology of the area. Larger deposits and projects have not been conducted and are not currently being contemplated in part due to the regulatory climate in Montana and metals prices. However, the unpatented mining claims are still being maintained in the areas of known mineral deposits pending favorable future conditions.

Road closures have adverse effects to companies involved with mineral exploration and development activities because a plan of operations to authorize motorized access would be required. Road closure does not mean that mining companies or individuals cannot obtain access; it means they would need to submit a plan of operations requesting motorized access for review and to determine whether limited access would be appropriate. The authorization process adds time and costs for a project proponent during the relatively short operating season. Road decommissioning adds to adverse effects because of the added costs associated with time and money needed for a plan of operations to be approved.

Wheeled motorized vehicle use within 300 feet from designated routes for the purposes of dispersed camping, a component of all alternatives, would have no impact on mineral access. Alternative 1 would continue this use per the 2001 Tri-State OHV decision and alternatives 2, 3 and 4 would also allow this use for the purposes of dispersed camping with certain resource provisions, as described in more detail in chapter 2. This aspect of the project would not have adverse impacts to mineral access because this is a use that is occurring now and would continue, provided adverse resource impacts are minimized.

Maintaining the current transportation system in the planning area (alternative 1) would not result in adverse impacts to mineral access, maintains the existing level of open motorized routes, and thus is the most favorable alternative for mineral exploration and development activities. Alternative 2 is less favorable than alternative 1 but better than alternative 3 or alternative 4 because there are fewer miles of route that would be decommissioned. Alternative 4 is impacts mineral resource activities the most because road closures are proposed specifically in areas of current and past mineral interest. Specific permitted projects that are negatively affected by alternatives 2, 3 and 4 are shown on table 44. Mitigating these impacts may be possible and would have to be done on a case by case basis with the claimant. The result is more administrative work for the area minerals administrator, additional time needed by resources specialists, and additional permitting time needed by the claimant.

Table 44. Effects by alternative on areas of potential locatable mineral activity

Project Name/Area	Drainage	Deposit Type, Status	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Heddleston Mining District/Upper Blackfoot-Mike Horse area	Upper Blackfoot River and headwaters	Porphyry copper deposit in historic mining area, mixed NFS and private land; Area is a State Comprehensive Environmental Cleanup and Responsibility Act (CECRA) site and currently being reclaimed.	Numerous open motorized routes	Numerous routes would be converted to motorized trails – negative impact on access for mineral prospecting and exploration	Same as alternative 2 and many routes would be decommissioned – negative impact on access for mineral prospecting and exploration	More routes closed in this area than alternatives 2 and 3 and many routes would be decommissioned – resulting in a moderate adverse impact to mineral prospecting and exploration activities in this area
Copper Creek-Green Mountain	Copper Creek	Stratabound copper-silver deposits relatively small and disseminated. Relatively small scale mineral development in the past and prospect level activity currently with several active unpatented mining claims	Motorized open routes	Same as alternative 1	Same as alternative 1	About 8 road miles would be closed in mineralized area resulting in a substantial adverse impact to mineral exploration and development activity access in this area
Lincoln Gulch	Lincoln Gulch	Gold placers worked mostly before the turn of the century and a low grade bedrock gold deposit near the mouth of Lincoln Gulch. Small scale placer project ongoing on NFS lands in this area and a handful of active unpatented mining claims.	Motorized open routes with some seasonal restrictions	Mostly the same as alternative 1 with a few route segments designated open year round	Mostly the same as alternative 1 but some routes decommissioned resulting in minor adverse impacts to access in this area for mineral exploration and development.	Substantially more routes would be closed than alternatives 2 and 3 resulting in a moderate adverse impact to mineral exploration and development activity access in this area (this area is heavily roaded).
Sauerkraut, Willow, Stonewall, Poorman Creeks areas	Sauerkraut, Willow, Stonewall, Poorman Creeks	Historic through recent placer gold mining has left overburden piles and disturbed valley bottom areas. Remnant waste	Generally good access to these historic placer mined areas,	Little change from alternative 1	Little change from alternative 1, many routes would be decommissioned in upland areas	All of the roads in the Sauerkraut drainage area would be closed yearlong resulting in a substantial adverse

Project Name/Area	Drainage	Deposit Type, Status	Alternative 1	Alternative 2	Alternative 3	Alternative 4
		piles and culturally interesting stacked rock bedrock drain in Sauerkraut Creek.	private land important for access			impact in this area. For Willow, Stonewall and Poorman Creeks there would be little change from alternative 1.
McDonald Gold – Seven Up Pete Areas	Seven Up Pete, Hogum Creeks, McDonald Gold portion is just north of Blackfoot River and Aspen Campground	Historic gold and silver mining area. Recent exploration resulted in identification of 10 million tons of gold ore at the Seven Up Pete area and 8.2 million ounces of gold in the McDonald Gold planning area	Generally good access to this area on open and closed roads, includes a block of private land	Primary access across NFS to private land would be converted to a motorized trail (routes 1841, 1841-B1, 1841-J1) and low standard non-System route would be decommissioned – negative impact.	Non-System route would be decommissioned – negative impact, north half of road 1841 (closed yearlong on alternative 1) would be open to motorized use – positive impact	Similar to alternative 3 but an added slight beneficial effect due to construction of new motorized trail connector
Stemple - Gould-Virginia Creek area	Gould, Virginia and Foolhen Creeks	Underlain by the Silver Bell stock which has resulted in historic mining of primarily gold and silver. There are numerous active unpatented mining claims in this area.	Good yearlong motorized access to many portions of the mineralized area	Numerous short connector spurs would be closed yearlong but put in storage. Negative impact as potential operators would have to get a Plan of Operations for access.	Same as alternative 2.	Routes in Granite Butte mineralized area would be closed and decommissioned resulting in a substantial adverse impact to mineral exploration and development activities in this area.

Table 45. Mineral activity table effects by alternative for Blackfoot travel planning area

Project/Mining Claim Name and Type (placer or lode)	Area/drainage	Disturbance Area	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Butterfly/Lode	Poorman Creek area	< 1 acre	Motorized Access with seasonal closure	Same as alternative 1	Road to project would be decommissioned, negative impact	Same as alternative 3
Hawkeye-Sterling/Placer	Lincoln Gulch	< 1 acre	Motorized access with seasonal closure	Same as alternative 1	Some roads in planning area would be decommissioned. Alternate route to planning area would need to be found or this alternative would have a negative impact.	Same as alternative 3
Hennesy/Placer	Stonewall Cr	< 1 acre	Motorized access	Same as alternative 1	Same as alternative 1	Same as alternative 1
Sunshine Lodes 1-3/Lode	Sauerkraut Cr	1-2 acres	Motorized access road then non-System road access to site	Motorized access road, unclassified route would be decommissioned, negative impact	Same as alternative 2	Road to planning area would be closed in this alternative. Negative impact.
Colby #1 and #2 / Placer	Washington Cr	<1 acre	Motorized access	Same as alternative 1	Same as alternative 1	Same as alternative 1
Sahan Daywi/ Placer	Lincoln Gulch	<1 acre	Motorized access with seasonal restriction	Same as alternative 1	Some roads in planning area would be decommissioned. Alternate route to planning area would need to be found or this alternative would have a negative impact.	Same as alternative 3
Gary's Load/ Placer	Washington Cr	2 acres	Motorized Access	Same as alternative 1	Same as alternative 1	Same as alternative 1
Baldy East (13)	Humbug Cr	<1 acre	Motorized access with seasonal restrictions	Same as alternative 1	Same as alternative1	Same as alternative 1
Baldy Mountain Group 1-4/Lode	Humbug Cr	2 acres	Motorized Access with seasonal	Motorized access in part on a closed road	Motorized access with seasonal restriction in	Same as alternative 3

Project/Mining Claim Name and Type (placer or lode)	Area/drainage	Disturbance Area	Alternative 1	Alternative 2	Alternative 3	Alternative 4
			restriction	put in storage – would need Plan of Operations for access at a minimum	part, other part of road would be decommissioned – negative impact	
White Hope/Lode	Beartrap Cr	2 acres	Motorized access on closed road via Plan of Operations	Same as alternative 1	Road would be open to motorized vehicles. Public benefit, miner would likely see that as a negative impact.	Same as alternative 3 however, additional currently closed but drivable roads would be decommissioned, resulting in an adverse impact to miner access.
Pardner/Exploration	American Gulch	3 acres	No public access to planning area – by landowner permission only	Same as alternative 1	Same as alternative 1	Same as alternative 1
Horse Laugh/Placer	Poorman Cr	< 1 acre	Motorized access	Route would be a designated motorized trail: adverse impact.	Route would be a non-motorized trail: adverse impact.	Route would be decommissioned: adverse impact
Lost Gold Placer #1/Placer	Nevada Cr	< 1 acre	Motorized Access	Same as alternative 1	Same as alternative 1	Same as alternative 1
Stockton/Lode	Nevada Cr	< 1 acre	Motorized access	Same as alternative 1	Same as alternative 1	Same as alternative 1
Lil Brown/Placer	Moose Cr	<1 acre	Motorized access on closed roads authorized by Plan of Operations	Same as alternative 1	Same as alternative 1	Same as alternative 1
Pistol Pete/Placer	Moose Cr	< 1 acre	Motorized access on closed roads authorized by Plan of Operations	Same as alternative 1	Same as alternative 1	Same as alternative 1
Beaver #1, #2, #3/Placer	Lincoln Gulch	5 acres	Motorized access with seasonal restriction	Same as alternative 1	Some roads in planning area would be decommissioned. Existing Alternate route to planning area would need to be	Same as alternative 3

Project/Mining Claim Name and Type (placer or lode)	Area/drainage	Disturbance Area	Alternative 1	Alternative 2	Alternative 3	Alternative 4
					found or this alternative would have a negative impact.	
Rollin Dream Placer/placer	Sauerkraut Cr	<1 acre	Motorized access road then non-System road access to site	Motorized access road, non-System route would be decommissioned, negative impact	Same as alternative 2	
Cotter Project/lode	Cotter Cr	2 acres	Motorized Access	Same as alternative 1	Same as alternative 1	Road to planning area would be closed in this alternative resulting in an adverse impact.

Compliance with Forest Plan and Other Relevant Laws, Regulations, Policies and Plans

All alternatives are consistent with the standards of the Helena Forest Plan, 1986 (pages II-26-27) for the most part, because they would not result in removal of a mining claimants rights to enter public land for prospecting or working valid existing mining claims. However, alternatives 2, 3 and 4 make access for mineral activities incrementally more difficult due to road closures and decommissioning which is somewhat inconsistent with Forest Plan Standard #1 – "Consistent with the Mining and Mineral Policy Act of 1970, continue to encourage the responsible development of mineral resources on National Forest lands. Concurrently, require mitigation measures to protect surface resources. The site specific project access issues may be mitigated through negotiations with the claimant on timing and scope of their activities on a case by case basis."

Project design features would be applied to minimize the likelihood of adverse effects, and includes working with individual claimants to ensure appropriate and reasonable access to their claims.

All alternatives are consistent with the Forest Plan standard for future locatable and mineral materials (page II-27) where access for development of locatable and leasable minerals would be allowed on a case by case basis, minimizing resources impacts.

The Forest Plan Big Game Security Amendment and Forest Plan Amendment for Management Areas N1 and R1 are a component of all action alternatives. These would have no effects to mineral resources because they would not result in changes in current or future mineral access.

For more details on compliance with the Forest Plan, see appendix A and for more details on compliance with other regulations and policy, see the Minerals Report (Ihle 2013) in the project record.

Recreation

Affected Environment

Existing Condition

Forest Service recreation management is guided by the Recreation Opportunity Spectrum (ROS), which allocates and manages outdoor recreation opportunities and activities by natural resource setting. The distribution of summer ROS classes in the Blackfoot planning area is shown in the following table.

Table 46. Summer ROS distribution in the Blackfoot travel planning area

Category	Acres	Percent
Primitive	2,084	<1
Semi-primitive Non-motorized	29,536	13
Semi-primitive Motorized	80,242	33
Roaded Natural	129,324	54
Rural	159	<1
Total	**241,345**	**100**

The area within the Blackfoot planning area offers opportunities for both motorized and non-motorized recreation across the Recreation Opportunity Spectrum (ROS). The ROS provides the framework for inventorying, planning and managing the recreation resource. The planning area predominately falls into the Roaded Natural, Semi-primitive Motorized, and Semi-primitive Non-Motorized categories due to past and current development, such as roads associated with timber harvest and mining activity, within and near the planning area. The largest tracks of semi-primitive non-motorized areas are the Inventoried Roadless Areas (refer to the Roadless Area section of this chapter).

The planning area is popular for recreation throughout the year. This is due in large part to the proximity of the large communities of Helena, Great Falls, and Missoula. Lincoln is centrally located to the planning area and residents contribute heavily to visitation throughout the four seasons. In addition, Forest visitors from the local communities of Helmville, Ovando, Elliston, Avon, Canyon Creek, Wolf Creek and others use the area for recreational and other purposes. Because of the tremendous fishing and hunting opportunities, the congressionally designated Scapegoat Wilderness adjacent to the planning area, and the presence of a National Scenic Trail, visitors from outside the local area are common. The planning area typically receives the heaviest recreation use during the late summer and fall big game hunting seasons. Winter and summer visitation is slightly less, while the spring snow melt season sees the least visitation. Firewood harvesting has increased dramatically in the area due to the availability of dead timber in close proximity to many Forest roads. Access for fuelwood is discussed in the socioeconomics section.

The majority of outdoor recreation in the planning area occurs without benefit of developed facilities in dispersed recreation settings accessed by improved and unimproved roads. There are two developed fee campgrounds and two non-fee campgrounds within the area and are popular at certain times during the use season. The popular Cummings cabin is the lone public recreation rental cabin in the area. Granite Butte lookout and Nevada Creek cabin are two administrative facilities that may be added to the Forest public rental cabin system in the future.

Motorized Use

Most non-winter motorized use takes place on open roads with the exception of a few system trails including Sauerkraut (401), Ogden Mountain (404), Stonewall (417), Stonewall Mountain (418), Gould/Helmville (467), Stonewall/Copper (485), and portions of Prickly/Nevada (487) and the CDNST (440).

There are approximately 50 miles of NFS trail that are currently open yearlong to wheeled motorized vehicles 50 inches in width or less. In addition, there about 5 miles of unclassified trails open to wheeled motorized travel yearlong and 1 mile of unclassified trail with a seasonal use restriction. It is important to note that the specific type of wheeled motorized vehicle (e.g. motorcycle, off-highway vehicle (OHV) allowed on a trail must be 50 inches or less in width and fit the existing tread width. A challenge with this approach that causes confusion and frustration with the public and Forest Service personnel alike is the inability to discern the tread width from looking at the most current Forest Travel map (2006). Off-highway vehicles and OHV riders with machines 50 inches in width or less would have to contact a USFS employee or somebody with local knowledge of the motorized trail in question to figure out whether the trail is a single-track that would permit only motorcycles, or two-track that would accommodate wider machines

Non-Motorized Use

There are currently 71 miles of NFS non-motorized trail within the Blackfoot travel planning area. Hikers, stock users, and mountain bikers are currently allowed on any and all non-motorized trails with no restrictions; a situation that changes under alternatives 2, 3 and 4. All action alternatives attempt to allay the inevitable conflict that would arise between stock users and mountain bikers on steeper trails with areas of limited site distance. Alternative 3 would further restrict use of non-motorized trails by closing all Scapegoat Wilderness portal trails to mountain bikers. These portal trails are very popular with stock users whose destination is the Scapegoat Wilderness. Closing the portal trails to mountain bikers would reduce conflict among user groups and minimize wilderness trespass from wheeled non-motorized recreationists. Alternative 4 would restrict wilderness portal trails to foot and stock traffic with the exception of the Continental Divide National Scenic Trail (CDNST).

Mountain Biking

The Lincoln Valley Chamber of Commerce partnered with the Lincoln Ranger District of the HNF and the International Mountain Bicycling Association (IMBA) in 2009 to identify several potential routes as a preliminary step toward utilizing the potential that exists in the Lincoln valley for providing a destination-quality mountain bike system. Several of the routes on NFS lands identified in the Mountain Bicycle Trails Master Plan (IMBA, 2009) are incorporated into alternatives 2, 3, and 4. Most of the routes would use existing roads and trails; however, there would be 32 miles of proposed new non-motorized mountain bike trail construction under alternatives 2 and 3, and 20 miles under alternative 4.

Environmental Consequences

Methodology

Data was gathered to describe the existing condition and for use as baseline information to analyze direct, indirect, and cumulative effects among the alternatives. The primary information sources are listed in the References section. In addition, observations and trends noted by HNF employees are vital to this analysis.

Key recreation issues and concerns were identified as a result of public and internal scoping for this project. These then became the focus of this recreation analysis and were tracked and addressed through every alternative. Key issues include providing for quality motorized and non-motorized trail systems and determining the managed use of the CDNST within the planning area.

A trail-by-trail review was undertaken for each alternative to determine current status and effects by alternative. This analysis was predicated on GIS generated maps for each alternative and forest data.

The alternative effect analysis is both quantitative and qualitative. The extent of effects on trails and other recreation opportunities is necessarily a qualitative assessment based on past forest visitor patterns, historical trends, and the experience of the recreation specialists completing this analysis.

Effects Common to All Alternatives

The effects of implementing a designated route system for travel are common to all alternatives. Even the no-action alternative would continue to limit motorized travel to previously existing routes, as a result of the 2001 Tri-State Off-Highway Vehicle decision; see chapter 2 for more details on off-route use allowed within 300 feet of routes. Law enforcement efforts would address travel violations under any scenario.

Implementation of any travel alternative would result in the displacement of an undetermined number of Forest visitors. Displacement is the movement of one or more types of recreational user to other locations better suited to their activity of choice. Overcrowding, lack of opportunities and a desire to avoid certain types of recreational activities are typical reasons for user displacement. Non-motorized users often wish to recreate in areas free of motorized travel. Motorized users may be displaced to other areas for their activities. The degree of user displacement would be dependent upon the travel alternative selected and cannot be predicted precisely.

Trails would be managed to established Forest Service standards to ensure consistency, user convenience, and resource protection. Some designated trails, existing and proposed, would require some level of construction or improvement and improvements may be needed even on existing trails to ensure they meet all Forest Service trail standards. The length of time required to improve all trails to existing standards can't be determined. While it is reasonable to assume it could take 10 years or longer, the timetable is dependent upon unknown factors such as: agency funding, supplemental grant funding, partnership/volunteer contributions, and natural environmental events.

Trailhead development would also be needed to accommodate use of the trail system. Improved trailhead facilities, primarily consisting of a graveled parking lot and signing, would greatly enhance user convenience and mitigate resource impacts. In addition, the construction of portal facilities (signing, maps, information) at several key locations may facilitate visitor use.

Occasional administrative use (defined in table 1 and in the Glossary) would be allowed under all alternatives on open routes, routes closed yearlong and routes closed seasonally.

Roads that are part of the HNF road system are commonly used by motorized trail users as a link between trails open to motorized use. Currently, and under all action alternatives, all open roads identified on the HNF transportation system within the planning area would be open to licensed vehicles only. Motorized mixed use is defined as designation of a NFS road for use by both highway-legal and non-highway-legal motor vehicles. Designating NFS roads for motorized mixed use requires an engineering analysis and must be completed by a qualified engineer. As it relates to the travel plan, analysis would occur on a road by road basis after completion of the planning process and implemented over time.

Effects Common to All Action Alternatives

Changes to management of motorized and non-motorized routes within the planning area would require a period of adjustment for Forest visitors. It is reasonable to assume there would be increased violations during the initial years of implementation. Education regarding the new travel restrictions would require additional emphasis by the Helena National Forest, with assistance from Montana Fish, Wildlife and Parks, and the public. Motorized routes that are clearly identified on a MVUM should greatly reduce any confusion involving motorized travel.

New travel restrictions on non-motorized trails should enhance available opportunities for non-motorized recreation by proactively addressing conflict issues on certain trails among user groups. Under a multifaceted non-motorized travel management approach, it would be important to ensure the Forest Visitor Map is updated to reflect changes to the non-motorized trail system given that these routes are not designated on a MVUM.

Designation, development, and maintenance of travel routes under any of the alternatives would be more costly than under the existing condition. All action alternatives designate a greater number of system trails than currently exist with substantial commitment to construct new trails.

New trailhead and parking area development would be necessary for visitor use of the expanded and reconfigured trail system. Most new trailheads and parking areas would be minimally developed. Improvements could consist of leveling and delineating parking areas, gravel surfacing, signing and restroom facilities. Size of new trailheads and parking areas could range from 1,000 to 20,000 square feet. New trailhead and parking area construction would adhere to applicable best management practices for construction of developed recreation sites (FS-990a, pg. 89-90).

Road management decisions: decommissioning, storage, more stringent restrictions on the season of motorized use, and road to trail conversion will displace an unknown number of forest visitors utilizing full-size vehicles (i.e., berry and mushroom pickers, hunters, firewood cutters). These activities will likely become more concentrated on routes that would remain open under alternatives 2, 3 and 4 as each of these action alternatives propose fewer miles of yearlong and seasonally open roads available.

Programmatic Forest Plan Amendments for Big Game Security and for Management Areas N1 and R1

Each action alternative would require a programmatic Forest Plan Amendment for Big Game Security and also a Forest Plan Amendment for Management Areas N1 and R1 to manage trails. These are described in detail in chapter 2 and both appendix F and I. The R1 and N1 amendment would differ slightly among the alternatives and is discussed under each alternative below. The big game security amendment would have, in general, no measureable or long-term adverse impacts to recreation resources. Proposed route changes and seasons of use are a component of each travel plan action alternative and analyzed in detail in this section. Other aspects of recreation use related to hunting are evaluated in the wildlife section of this chapter and was considered in the development of this amendment alternative in consultation with MFWP biologists.

Spatial and Temporal Context for Effects Analysis

The cumulative effects analysis area for trails travel management is the boundary of the Helena National Forest and the trails wholly or partially within that boundary.

Past, Present, and Foreseeable Activities Relevant to Cumulative Effects Analysis

Past travel decisions on the Helena National Forest for the North and South Belt Mountains and the future HNF Divide Travel Plan are listed in appendix D.

Alternative 1 – No Action

Direct and Indirect Effects

Motorized Use

No changes would be made to the existing system of available public motorized routes within the analysis area. Off-route travel by wheeled motorized vehicles would continue to be allowed within 300 feet of existing routes to access dispersed campsites. Alternative 1 would also allow the continued use of motorized vehicles on 466 miles of roads, 56 miles of system trail and currently open but unclassified routes.

Non-Motorized Use

As explained in chapter 1, no changes would be made to the existing system of available public non-motorized routes within the Blackfoot travel planning area. As described in chapter 2 for alternative 1, approximately 71 miles of non-motorized trail would be available to hikers, stock users, and wheeled non-motorized recreationists.

Trails of Interest

See appendix G for detailed maps of the CDNST, Helmville-Gould and Stonewall trails of interest by alternative.

Under alternative1, trails of interest in the planning area (CDNST, Helmville/Gould, and Stonewall) would be managed as they are currently; no changes are proposed (see appendix G for a map of these trail corridors and the types of uses that would continue to be permitted and a summary by trail section in appendix C). The CDNST would continue to be a mix of motorized and non-motorized sections; Flesher Pass to Stemple Pass would continue as a motorcycles-only trail and Stemple Pass to the junction with the Helmville/Gould trail (467) would continue as a motorized trail (open to vehicles 50 inches or less in width with no seasonal restrictions). There would be no increase in motorized use along the CDNST. The open roads that are part of the CDNST would continue to be open to legal highway vehicles.

The management direction of the CDNST discussed in the Regulatory Framework section allows motorized use of specific trail segments if the designated vehicle class and width were allowed on that segment prior to November 10, 1978, and the use would not substantially interfere with the nature and purposes of the CDNST (FSM 2353.42). HNF map data prior to 1978 indicates the Flesher Pass to Stemple Pass segment was open to motorized use. Though it isn’t clearly stated, the particular type of motorized use would have been two-wheel motorized because 4-wheel OHVs were not on the recreation scene yet and motorized trail vehicle width was limited by the Forest to 40 inches. The Continental Divide trail (440) between Stemple pass and the junction with the Helmville/Gould trail (467) utilized constructed roads to connect trail segments prior to November 10, 1978. Any new construction that would have occurred after 1978 to re-route the trail off an existing road would only be within the spirit of current CDNST management direction if it is open solely to non-motorized use, which is not how this segment is currently managed.

Another issue that complicates management of the CDNST between Stemple Pass and the Helmville/Gould trail is the proposed 500 acre Granite Butte Research Natural Area (RNA). This RNA is a designated N1 area under the 1986 Helena National Forest Plan. Forest direction for N1 areas asserts, “Dispersed recreation facilities, such as trails or trailhead developments would not be allowed”.

The Helmville/Gould (467) and Stonewall (417) trails (see appendix G for a map) would continue to be managed as motorized trails (open to vehicles 50 inches or less in width with no seasonal restrictions). Management of both trails is a contentious issue due to resource protection concerns. Additionally, the Helmville/Gould trail traverses the core of the Nevada Mountain Inventoried Roadless Area (IRA). Part of the Nevada Mountain IRA is designated R1 under the 1986 Forest Plan. Current management direction does not prohibit motorized trails within designated IRAs; however, R1 management areas include the following standard for recreation: “Motorized vehicles are not allowed in the management area. Exceptions may be allowed on a case-by-case basis where motorized vehicles are needed for legitimate mineral use.” Currently segments of trail 467 are either located within, just outside of, or serve as the boundary of this R1 area. It appears continued motorized travel on the Helmville/Gould trail conflicts with Forest Plan management direction.

Developed Trailheads

No new developed trailheads would be constructed under alternative 1.

Travel Plan Complexity

Forest visitor maps would remain somewhat confusing in regard to allowable use of motorized trails, but system trails, unlike roads, currently have no seasonal use restrictions to complicate understanding and compliance. Enforcement of the existing travel plan is complex.

Displacement

Displacement of non-motorized users on strictly non-motorized trails would not be an expected concern under alternative 1 unless the popularity of mountain biking increases dramatically within the planning area. It is reasonable to project the continuation or increase of motorized use on existing routes could displace an unknown percentage of non-motorized recreationists to other areas. Because there are abundant non-motorized opportunities available in the analysis area, displaced recreationists who prefer to recreate in areas with no motorized use could find other suitable areas to recreate. If motorized use in the analysis area increased substantially, some motorized users also could be displaced to other locations. Suitable areas for displaced motorized users would depend largely upon other travel plan decisions made on the Helena National Forest, adjacent National Forests, and other public lands. There are currently few public motorized recreation opportunities available on public lands near the analysis area. If sufficient OHV opportunities are not provided on the HNF, motorized enthusiasts would be forced to travel longer distances to participate in their recreational pursuits.

Cumulative Effects

Combining the effects of implementing alternative 1 with other past, present and reasonably foreseeable future actions (appendix D) would not measurably affect any particular recreation user-group.

However, the existing condition provides little clarity to some travel management issues, particularly unclassified routes. Unclassified routes are comparatively less problematic for trails versus roads as only 6 miles of unclassified trails have been identified that are currently open to motorized use. Under alternative 1, there would be no specific travel decision to indicate what roads and trails should become legitimate parts of the travel system and which should be eliminated. Unclassified routes would not be actively managed to provide recreation opportunities or resource protection. Authorities are in place that would allow the forest supervisor to close unclassified routes to motorized use should resource damage become a concern. Adoption of alternative 1 would likely result in continuing management and law enforcement challenges related to route usage in general, and management of the CDNST and Helmville/Gould trails in particular.

Prior to 2001, most HNF lands were open to motorized travel unless specifically closed. Through the Tri-State OHV decision, management direction changed to prohibit off-route wheeled motorized travel. There was sound resource rationale for that decision, but it greatly altered opportunities for motorized recreation on the Helena National Forest. Wheeled motorized travel is now authorized only on existing designated routes, with exceptions for use within 300 feet of designated routes, as described in chapter 1.

Other portions of the Helena National Forest have undergone or are currently undergoing travel planning. Travel decisions made for the North and South Belt Mountains resulted in new motorized use restrictions. Those decisions and future travel decisions for the Divide Travel Plan area could result in an increase in motorized use within the BNWTP area.

Alternative 2

Project Design Features

Project design feature tied to the recreation resource are listed in chapter 2, page 42.

Direct and Indirect Effects

Motorized Use

Alternative 2 would designate approximately 92 miles of existing roads and trails as motorized trail. The existing roads that would be designated as trails are a mix of open System and unclassified roads (both yearlong and seasonal) and closed System and unclassified roads. There would be 2 miles of new motorized trail constructed to access viewpoints and make connections with existing roads and/or trails. Though there would be a net increase of approximately 34 miles of motorized trail opportunity, approximately 14 miles of motorized trail would be converted to non-motorized use. Unlike alternative 1, designated motorized trails would be further split and shown on an MVUM as a trail open to vehicles 50 inches or less or open to two-wheel motorized. Trail designated as motorized would be further divided to include those open yearlong and others with seasonal restrictions.

Non-Motorized Use

Miles of non-motorized trails available for quiet recreation under alternative 2 would increase in the near term from 71 to 120 (table 47). After all the proposed new non-motorized trails were constructed, an additional 32 miles would be added to the total. It is anticipated that new non-motorized trail construction would be implemented over time and may not be fully implemented for several years.

The additional miles of non-motorized trail would be comprised of segments of previously closed and open roads in addition to some motorized trails. Motorized system trails proposed for conversion to non-motorized use are: Sauerkraut (401), Ogden Mountain (404), Stonewall/Copper (485), and Stonewall Mountain (418) from Snowbank Lake to the junction with Stonewall (417) trail. A 0.8 mile unclassified trail (U-447) at the head of Copper Creek currently open to motorized would also be converted to non-motorized use.

As stated previously, new travel restrictions on non-motorized trails should enhance available opportunities for non-motorized recreation by proactively addressing conflict issues on certain trails among user groups.

Table 47. Alternative 2: non-motorized trails by allowed use

Type of Use	Alternative 1 Existing Condition (miles)	Alternative 2 (miles)*
Foot only	0	0
Foot, Stock only	0	0
Foot, Mountain Bike only	0	19.0
Foot, Stock, Mountain Bike	71.0	101.0
Total	**71.0**	**120.0**

*Miles of new non-motorized construction are included

Trails of Interest

See appendix G for detailed maps of the CDNST, Helmville-Gould and Stonewall trails of interest by alternative.

The CDNST, Helmville-Gould, and Stonewall trails would be managed the same under alternatives 1 and 2 (table 48); see the discussion of direct and indirect effects for alternative 1.

Table 48. Alternative 2: trails of interest by allowed use

Type of Use	Alternative 1 Existing Condition (miles)			Alternative 2 (miles)		
	CDNST (440)	Helmville/Gould (467)	Stonewall (417)	CDNST (440)	Helmville/Gould (467)	Stonewall (417)
Non-Motorized						
Foot, Stock only	0	0	0	0	0	0
Foot, Stock, Mountain Bike	32.0	0	0	32.0	0	0
Motorized						
Vehicles less that 50" - no seasonal restrictions	2.0	13.0	5.0	5.0	13.0	5.0
Vehicles less than 50" - closed 9/1-6/30	0	0	0	0	0	0
Single track - no seasonal restrictions	10.0	0	0	11.0	0	0

Developed Trailheads

Five new trailheads would be established under alternative 2, as described in more detail in chapter 2. A trailhead in First Gulch (T15N R7W Section 11) is expected to accommodate primarily OHV enthusiasts during the timeframe when OHV trails in the area are open (7/1 – 8/31) in addition to hunters during the late summer and fall. The trailhead at the southern end of the Stonewall/Copper trail (485) in T15N R9W Section 27 would predominately serve non-motorized recreationists including hunters. New parking areas, one of which is labelled Shuttle Drop Off/Pick-Up on the alternative 2 map, are also proposed under alternative 2. These are essentially minimally developed trailheads that are expected to serve primarily the mountain bike community. One parking area is located in T15N, R9W Section 33 near the Forest boundary and the other two in T13N, R9W Section 27 near Dalton Mountain. There is an existing trailhead in T13N, R9W Section 27 that could be used for one of the parking areas, but may need to be enlarged. The proposed trailhead on the Hogum Creek road would serve recreationists using a newly designated motorized route that would connect Hogum Creek road and Stemple Pass.

There would be no parking area construction until such time that funds are secured to build the new mountain bike trails accessed from these parking areas.

Travel Plan Complexity

The Travel Plan becomes more detailed in regard to trail management under alternative 2. A motor vehicle use map would be developed under alternative 2 and should help alleviate the added complexity. Designating motorized trails and clearly depicting them on an MVUM would take away any speculation by the public as to the allowable use, and dates of open use.

As with all action alternatives, newly constructed mountain bike trails would result in an additional non-motorized use designation: open to foot and mountain bike use only. However, all existing non-motorized trails or those proposed to be converted from motorized trails would remain open to stock use. Alternative 2 proposes a more intensively managed non-motorized trail system, thus it would be important to ensure the forest visitor map is updated to reflect changes to the non-motorized trail system given that these routes are not designated on a MVUM.

Displacement

Both motorized and non-motorized trail opportunities would increase under alternative 2. Additional miles of motorized routes on converted roads would be somewhat offset by a loss of single and two-track opportunities. Motorized users would be displaced from approximately 14 miles of trail available to them under the existing condition. Unless the roads being converted to motorized trails were reconstructed in a manner to create more of a trail experience, more adventurous users may look elsewhere for their experience. Overall, the motorized trail system could be characterized as less challenging under alternative 2. That being said, many inexperienced users and other OHV enthusiasts prefer less challenging routes.

There would be no displacement issues among non-motorized user groups on the 71 miles of pre-existing non-motorized system trails. However, the additional 51 miles of opportunities that would result from incorporating select roads and new non-motorized construction would not be uniformly available for all types of non-motorized use. Though all non-motorized users would benefit from additional opportunities under the proposed action, hikers and mountain bikers would realize the greatest benefit.

Cumulative Effects

Implementing alternative 2 in combination with the effects of other past, present and future actions (appendix D) would cumulatively increase transportation routes managed under the Forest system of trails. Motorized recreationists would lose approximately 15 miles of trail currently available to them, but would realize a net increase in 36 miles of designated trail that would be open to OHV 50 inches or less in width. This enlarged motorized trail system could help to absorb displaced OHV enthusiasts from other areas where motorized use has been restricted. The more extensive non-motorized trail system proposed under alternative 2 would likely result in an increase in non-motorized use, particularly mountain biking. Additional mountain bike tourists and motorized recreationists would provide economic benefits to Lincoln and other area communities.

Alternative 3

Direct and Indirect Effects

Motorized Use

As described in chapter 2, alternative 3 would designate 44 miles of existing roads and trails as motorized trail open to seasonal use only. The existing roads that would be designated as trails are a mix of open system and unclassified roads (both yearlong and seasonal) and closed system and unclassified roads. There would be 3 miles of new motorized trail constructed to make connections with existing roads and/or trails. Approximately 50 miles of motorized trail would be converted to non-motorized use. Alternative 3 would result in a net decrease of 12 miles of motorized trail opportunity. Similar to alternative 2, designated motorized trails would be shown on an MVUM as open to vehicles 50 inches or less; however, there would be no designated two-wheel motorized trails.

Unlike other alternatives, all designated motorized trail use would be restricted to July 1 - August 31 for additional resource protection during the various hunting seasons that commence September 1.

Non-Motorized Use

Miles of non-motorized trails available for quiet recreation under alternative 3 would increase from 71 to 158 (table 49). The additional miles of non-motorized trail would be comprised of segments of previously closed and open roads in addition to some motorized trails. An additional 31 miles would be added to the total of newly constructed mountain bike trail. It is anticipated that most new mountain bike construction would not be fully implemented for several years.

The additional miles of non-motorized trail would be comprised of segments of previously closed and open roads in addition to some motorized trails. Motorized NFS trails proposed for conversion to non-motorized use are: Sauerkraut (401), Ogden Mountain (404), Stonewall Mountain (418), Helmville/Gould (467), Stonewall/Copper (485), and all the motorized segments of Prickly/Nevada (487) and the CDNST (440). A 0.8-mile unclassified trail (U-447) at the head of Copper Creek currently open to motorized use would also be converted to non-motorized use.

Foot and stock use only would be a new allowable use category added to the trail management scheme under alternative 3. Alternative 3 would close Scapegoat Wilderness portal trails to mountain bikers. Closing the portal trails to mountain bikers would reduce conflict among non-motorized user groups and minimize wilderness trespass from wheeled non-motorized recreationists. Effected portal trails include: Silver King (420), Landers Fork (438), CDNST (440), Lone Mountain (477), Mainline (481), Arrastra Creek (482), Dry Creek (483), Porcupine Basin (488), Alice Creek (490), and Lewis & Clark Pass (493).

Table 49. Alternative 3: non-motorized trails by allowed use

Type of Use	Alternative 1 Existing Condition (miles)	Alternative 3 (miles)*
Foot only	0	0
Foot, Stock only	0	42.0
Foot, Mountain Bike only	0	18.0
Foot, Stock, Mountain Bike	71.0	98.0
Total	**71.0**	**158.0**

*Miles of new non-motorized construction are included

Trails of Interest

See appendix G for detailed maps of the CDNST, Helmville-Gould and Stonewall trails of interest by alternative.

The CDNST, Helmville/Gould, and Stonewall trails would be managed differently under alternative 3 (table 50). Helmville/Gould would convert entirely to a non-motorized trail open to all categories of non-motorized uses throughout the entire length of trail. A 1-mile motorized segment would remain open on the CDNST between NFS road 485 and the junction of the Helmville/Gould trail. This segment is on a road that existed prior to November 10, 1978, thus continued motorized use here would be compliant with National CDNST management direction. The remainder of the CDNST would be open to a mix of non-motorized uses depending upon the segment. Alternative 3 is consistent with Forest Plan and National direction regarding management of the both the CDNST and the Helmville/Gould trail. The Forest Plan would be amended to address this trail. The only change to the Stonewall Trail would be limiting wheeled motorized use to the open period of July 1 - Aug 31 (see appendix G for maps of these segments).

Table 50. Alternative 3: trails of interest by allowed use*

	Alternative 1 Existing Condition (miles)			Alternative 3 (miles)		
Type of Use	**CDNST (440)**	**Gould/Helmville (467)**	**Stonewall (417)**	**CDNST (440)**	**Gould/Helmville (467)**	**Stonewall (417)**
Non-Motorized						
Foot, Stock only	0	0	0	14	0	0
Foot, Stock, Mountain Bike	32.0	0	0	33.0	13.0	0
Motorized						
Vehicles less that 50" - no seasonal restrictions	2.0	13	5.0	0	0	0
Vehicles less than 50” - closed 9/1-6/30	0	0	0	1	0	5.0
Single track - no seasonal restrictions	10.0	0	0	0	0	0

*mileage calculations incorporate distance estimates for new construction and reconstruction

Developed Trailheads

There is no change to the management of developed trailheads in alternative 3 from alternative 2. Please see the discussion of Developed Trailheads in alternative 2.

Travel Plan Complexity

Like alternative 2, alternative 3 results in a more complex travel plan in regard to trail management than the existing plan. The travel plan with respect to motorized would be simpler than alternative 2 because all motorized use would be limited to one time period (July 1 - August 31), and there would be only one use category (vehicles less than 50”) . With respect to non-motorized use, the travel plan is more complex due to the addition of another allowable use category (foot and stock use only). As with all action alternatives, newly constructed mountain bike trails would result in additional non-motorized use designation: open to foot and mountain bike use only. However, all existing non-motorized trails or those proposed to be converted from motorized trails would remain open to stock use. Though more complex in nature than alternative 1; alternative 3 does considerably more to address potential site-specific conflict between non-motorized and motorized recreationists on select trails, and among the different user groups on non-motorized trails.

Displacement

Alternative 3 has the most substantial changes proposed to both the motorized and non-motorized system of trails. The proposed changes would be expected to produce the greatest amount of user displacement.

Motorized trail opportunities would decrease under alternative 3 by 12 miles. Aside from the aforementioned (approximate) 1 mile of CDNST that would remain open to motorized use, the only other currently existing system trail that would remain available to motorized use is the Stonewall (417) trail. The additional miles of motorized trails from converted roads would offset, to a degree, the loss of previously open system trails. Two-wheel motorized enthusiasts would continue to have access to all designated motorized trails; however, with the loss of a segment of the CDNST, no designated motorized single track opportunities would be available. Overall, the motorized trail system could be characterized as having fewer, and less challenging opportunities than under the other alternatives. An unknown number of both 4-wheel and 2-wheel motorized recreationists would probably be displaced to other parts of the Forest, neighboring Forests, or other public lands.

All non-motorized users would benefit to some extent from additional opportunities under alternative 3 compared to the existing condition. An unknown number of mountain bikers would be displaced from all non-motorized wilderness portal trails, but would have ample alternative non-motorized routes available. As with alternative 2, additional opportunities offered by incorporating select roads and new non-motorized construction would not occur uniformly for all types of non-motorized use. Once constructed, stock users would be prohibited from using 18 miles of new non-motorized trail. Overall stock user access is the same for both action alternatives and includes exclusive use with hikers on the wilderness portal trails.

Cumulative Effects

Alternative 3 reduces the amount of OHV opportunities in the Blackfoot travel planning area, so when combined with other past, present, and future actions (appendix D) would result in a cumulative decrease of motorized transportation routes managed under the Forest system of trails. Alternative 3 increases the amount of non-motorized opportunities in the analysis area, thus it would result in a cumulative increase of non-motorized transportation routes included in the National Forest System of trails.

The more extensive non-motorized trail system proposed under alternative 3 would likely result in an increase in non-motorized use, particularly mountain biking. Additional mountain bike tourists could provide economic benefits to Lincoln and other area communities; however, fewer OHV trail opportunities may displace some motorized users from the Blackfoot travel planning area taking with them their associated economic benefit to local communities; socioeconomics are discussed later in this chapter.

Alternative 4

Direct and Indirect Effects

Motorized Use

Alternative 4 would designate 51 miles of existing roads and trails as motorized trail. The existing roads that would be designated as trails are a mix of open NFS and unclassified roads (both yearlong and seasonal) and closed NFS and unclassified roads. Nine miles of motorized trail would be reconstructed on segments of the Stonewall (417) trail and Helmville/Gould (467) trail. There would be 4 miles of new motorized trail constructed to access viewpoints and make connections with existing roads or trails. Although there would be a net increase of 8 miles of motorized trail opportunity, approximately 35 miles of motorized trail would be converted to non-motorized use or decommissioned. Similar to alternative 3, designated motorized trails would be shown on an MVUM as open to vehicles 50 inches or less wide with no separate designation for two-wheel motorized trails. Trails designated as motorized would be further divided to include those open yearlong and others with seasonal restrictions. In addition to the use category M-08.00, developed for alternatives 2 and 3 restricting designated motorized trail use to July 1-August 31, two additional use categories with restriction dates were developed for alternative 4. Use category M-08.10 designates a trail open for motorized use between June 1 and October 14 and M-08.105 designates a trail open for motorized use between July 1 and October 14. These additional seasonal restriction categories would allow for a longer riding season on the majority of motorized trails within the planning area in comparison to alternative 3, which places all the designated motorized trails into the more restrictive use category M-08.00.

Non-Motorized Use

Miles of non-motorized trails available for quiet recreation under alternative 4 would increase in the near term from 71 to 129 (table 51). After construction of all the proposed new non-motorized trails an additional 21 miles would be added to the total. It is anticipated that most new construction would not be fully implemented for several years.

The additional miles of non-motorized trail would be comprised of segments of previously closed and open roads in addition to some motorized trails. Motorized NFS trails proposed for conversion to non-motorized use are: Sauerkraut (401), Ogden Mountain (404), Snowbank Creek/Sucker Creek (418), Stonewall/Copper (485), and most of the CDNST (440). A 0.8-mile unclassified trail (U-447) at the head of Copper Creek currently open to motorized use would also be converted to non-motorized use. Travel restrictions on non-motorized trails, (e.g. foot and stock only, foot and mountain bike only) should enhance available opportunities for non-motorized recreation by proactively addressing conflict issues on certain trails among user groups. Formal monitoring efforts occurred in 2008 and will be implemented again 2017. This effort will provide data to resource managers to better gauge the amount of use and potential conflict between uses that is occurring within the project area. Informal monitoring will continue every year as Forest personnel make visitor contacts in the field and in town hall or District office settings.

Table 51. Alternative 4-Preferred Alternative: Non-motorized trails by allowed use

Type of Use	Alternative 1 Existing Condition (miles)	Alternative 4 Preferred Alternative (miles)*
Foot only	0	0
Foot, Stock only	0	21
Foot, Mountain Bike only	0	18
Foot, Stock, Mountain Bike	71	90
Total	**71**	**129**

*Miles of new non-motorized construction are included

Trails of Interest

Under Alternative 4, a 1-mile motorized segment of the CDNST would remain open to vehicles 50 inches or less wide. This segment is a road labeled 485D on the latest version (2006) of the Helena National Forest Visitor Map and runs from NFS road 485 to the junction of the Helmville/Gould trail (467). This road existed prior to November 10, 1978, thus continued motorized use here would be compliant with National CDNST management direction and would provide motorized access to the east end of trail 467 and the northwest terminus of the Cellar/Ogilvie OHV trail (312) managed by the Helena National Forest. The remainder of the CDNST would be open to foot, stock, and mountain bike traffic including the 3 miles of proposed new construction that would reroute the trail around private property and move trail users off segments of the CDNST co-located with roads open to highway legal vehicles. A new minimally developed trailhead serving recreationists using the CDNST, Helmville Gould, and Cellar/Ogilvie trails would be constructed near Marsh Creek road in

T13N, R7W Section 34. See appendix G for detailed maps of the CDNST, Helmville-Gould and Stonewall trails.

According to Forest Service policy, mountain bikes may be allowed on the CDNST as long as their use does not substantially interfere with the nature and purposes of the CDNST (FSM 2353.42). Most of the CDNST within the planning area currently receives light mountain bike use. Conflicts between mountain bikers and other user groups have been documented and studied for over 25 years. The conflicts between user groups are often based on concerns over safety, solitude, and aesthetics. Increased mountain bike use can also result in rutting and degradation of trails. There are many established techniques for limiting this resource damage and this type of damage is not caused by mountain bikes alone. Indeed some studies have shown that mountain bike use and equestrian use can have comparable damage to trail surfaces.

Should the popularity of the trail increase significantly among mountain bike users, it would be necessary to adjust management of the trail in the future so that hikers and horseback riders are provided a high-quality recreational opportunity without excessive numbers of bicyclists. Alternative 4 is consistent with Forest Plan and National direction regarding management of the CDNST and includes a programmatic Forest Plan amendment for continued management of the CDNST through the proposed Granite Butte RNA. Appendix I illustrates how the wording in the Forest Plan would change for Management Area N1 related to the CDNST.

Both the Helmville Gould (467) and Stonewall (417) trails would remain open to motorized use in their entirety, but the season of allowed motorized use would be restricted to July 1 through October 14. To address layout sustainability and user safety both trails would have segments relocated and reconstructed to bring them into alignment with Forest Service design standards for OHV trails. Reconstruction would adhere to applicable agency best management practices for construction of motorized and non-motorized trails (FS-990a, pg. 91-92) and abandoned segments of trail would be rehabilitated to mitigate resource concerns. These improvements to the Helmville-Gould would provide continuous OHV access through Helmville-Gould and the improvements to the Stonewall trail would also improve vista opportunities. The Forest Plan would be amended to incorporate continued motorized use of Helmville/Gould through the Management Area R1 from T13N R7W Section 33 to T13N R8W Section 33. Appendix I illustrates how the wording in the Forest Plan would change for Management Area R1 related to the Helmville-Gould trail. The existing trailhead for Stonewall Trail is a small turnaround at the end of Keep Cool Road (1821). Under alternative 4, a short segment of trail (less than 1mile) would be constructed from the Sucker/Keep Cool road (1800) to connect with road 1821-B1, which is connected to the upper end of road 1821. The proposed new trail construction would allow most of road 1821 to be managed as a yearlong closure to all forms of motorized use, while still allowing motorized access to Stonewall Trail and the popular Stonewall Fire Lookout.

Table 52. Alternative 4-Preferred Alternative: Trails of interest by allowed use*

Type of Use	Alternative 1 Existing Condition (miles)			Alternative 4 Preferred Alternative (miles)		
	CDNST (440)	Helmville/Gould (467)	Stonewall (417)	CDNST (440)	Helmville/Gould (467)	Stonewall (417)
Non-Motorized						
Foot, Stock only	0	0	0	0	**0**	0
Foot, Stock, Mountain Bike	32	0	0	49*	**0**	0
Motorized						
Vehicles less that 50" - no seasonal restrictions	2	13	5	0	**0**	0
Vehicles less than 50" - closed 9/1-6/30	0	0	0	0	**0**	0
Vehicles less than 50" - closed 10/15-6/30	0	0	0	1	14*	6*
Single-track - no seasonal restrictions	10	0	0	0	0	0

*mileage calculations incorporate distance estimates for new construction and reconstruction

Developed Trailheads

Seven new trailheads and two new parking areas would be designated under alternative 4 to facilitate road and trail changes. These are the same as those described for alternatives 2 and 3 in addition to the following (see maps in appendix G for more details):

- Trailhead along 1821-B1-NEW in T15N R8W Section 33
- Trailhead along 485-D1 in T13N R7W, Section 34

These would provide parking areas to access new non-motorized trails. The trailhead just off the Marsh Creek road (485) in T13N, R7W Section 34 and the Sucker-Keep Cool road (1800) in T15N, R8W Section 33would serve recreationists accessing motorized trails. The Marsh Creek trailhead would provide parking access for the non-motorized CDNST (440), and motorized trails — Helmville/Gould (467) and Cellar/Ogilvie (312). A new trailhead on the Sucker-Keep Cool road would provide a parking area for recreationists to access the Stonewall (417) trail and Stonewall lookout. The proposed trailhead on the Hogum Creek road would serve recreationists using a newly designated motorized route that would connect Hogum Creek road and Stemple Pass.

Travel Plan Complexity

When compared to alternatives 1, 2 and 3, motorized trails are most intensely managed under alternative 4, because two additional motorized trail closure-date designations are added (closed 10/15-5/31, closed 10/15-6/30). A motor vehicle use map would be developed under alternative 4 and would help alleviate the added complexity. Designating motorized trails and clearly depicting them on an MVUM will minimize speculation by the public as to the type and date of allowable use.

Existing non-motorized trails would be designated as open to foot and stock only or open to foot, stock, and mountain bike use. As with all action alternatives, newly constructed mountain bike trails would result in an additional non-motorized use designation: open to foot and mountain bike use only. However, all existing non-motorized trails or those proposed to be converted from motorized trails would remain open to stock use. It will be important to ensure the Forest visitor map is updated to reflect changes to the non-motorized trail system given that these routes are not designated on a MVUM.

Displacement

Both motorized and non-motorized trail opportunities, in terms of miles of trail available, would increase under alternative 4. Loss of single and two-track opportunities would be offset by additional miles of newly designated motorized routes on converted roads. Motorized users would be displaced from approximately 35 miles of trail available to them under the existing condition. Unless the roads being converted to motorized trails were reconstructed in a manner to create more of a trail experience, more adventurous users may look elsewhere for their experience. Overall, the motorized trail system could be characterized as less challenging under alternative 4. However, many inexperienced users and other OHV enthusiasts prefer less challenging routes. Seasonal restrictions on motorized trails would likely displace an unknown number of motorized trail users in the spring and fall seasons.

All non-motorized users would benefit to some extent from additional opportunities under alternative 4 compared to the existing condition. An unknown number of mountain bike users would be displaced from all wilderness portal trails except the CDNST, but would have ample alternate non-motorized routes available. As with alternatives 2 and 3, additional opportunities offered by incorporating select roads and new non-motorized construction would not occur uniformly for all types of non-motorized use. Once constructed, stock users would be prohibited from using 18 miles of new non-motorized trail.

Irreversible and Irretrievable Commitments

Implementation of alternative 4 involves a commitment of a range of natural, physical, human and fiscal resources. Land committed for the construction of trails and trailheads is considered an irreversible commitment during the time period that the land is obligated for this purpose. There would be no irretrievable commitments.

Cumulative Effects

Alternative 4, the preferred alternative, would result in a net increase in the amount of both motorized and non-motorized trail opportunities in the planning area; therefore, implementation would add to the cumulative increase of transportation routes managed under the National Forest System of trails. Building and maintaining the more extensive trail system proposed under the preferred alternative would require additional Forest allocated dollars and a greater reliance on “outside” agency funding and volunteers. Motorized recreationists would lose approximately 35 miles of trail currently available to them, but after construction and reconstruction activities, would realize a net increase in 13 miles of designated trail that would be open to OHVs 50 inches or less in width. This enlarged, reconfigured, and improved motorized trail system could help to absorb displaced OHV enthusiasts from other areas where motorized use has been restricted. The more extensive non-motorized trail system proposed under alternative 4 would likely result in an increase in non-motorized use, particularly mountain biking. Additional mountain bike tourists and motorized recreationists could provide economic benefits to Lincoln and other area communities; socioeconomics is discussed later in this chapter.

Conclusions

Each of the 4 alternatives meets, in varying degrees, the purpose and need of the Blackfoot Travel Plan as it relates directly to recreation management.

- The larger trail system resulting from the action alternatives would require maintenance National direction for trail standards is primarily found in the Forest Service Trails Handbook, FSH 2309.18, and mainly addresses trail maintenance priorities—correcting unsafe conditions, resource damage, etc.
- Alternative 1 does not reduce the complexity of the current Forest Visitor Map. Management of the existing trail system is fairly straightforward with the exception of the ambiguity resulting from the lack of clearly designating motorized trails as open to two-wheel motorized or motorized 50 inches or less in width. Alternatives 2, 3 and 4 would clearly show the trails and roads open to motorized use on a MVUM and more specifically, the type and season of allowable motorized use. This would be an improvement. Under alternative 1, all non-motorized trails remain open to foot, stock, and mountain bike traffic with no exceptions. Proposed management of the non-motorized trail system is more detailed under alternatives 2, 3 and 4; therefore, the Forest Visitor Map would need to be updated for any of these alternatives to reflect the allowable non-motorized uses of the trails within the planning area.
- Alternatives 1, 2, 3 and 4 would provide for quality non-motorized trail systems to varying degrees. All existing non-motorized trails would continue to be managed for non-motorized use under each alternative, though not necessarily for all types of non-motorized use. The non-motorized trail systems proposed under alternatives 2, 3, and 4 would provide substantial additional opportunities through new construction and motorized to non-motorized trail conversions.
- Under alternatives 2, 3, and 4, motorized recreationists would lose riding opportunities currently available to them. In addition, the action alternatives each incorporate restrictions on the season of motorized use on designated motorized trails. These losses and restrictions would be offset to some degree by new motorized trail construction and road to trail conversions. Alternatives 3 and 4 do not provide any single-track opportunities for motorcycles, but motorcycles could continue to use any trail open to vehicles 50 inches or less.
- All four alternatives would continue to allow wheeled motorized vehicle travel for dispersed camping (and parking associated with camping) within 300 feet of designated NFS motorized routes. This would provide access to the majority of previously established dispersed recreation sites. Under the action alternatives, this limited off-route travel would be permissible as long as no new permanent routes are created by this activity; no damage to existing vegetation, soil, or water resource occurs; travel off-route does not cross streams, and travel off-route does not traverse riparian or wet areas. All alternatives would also provide for parking safely within 30 feet of the edge of designated routes for legal recreational activities.
- All action alternatives allow for the continued use of the CDNST through the proposed Granite Butte Research Natural Area, a Forest designated Undisturbed Ecosystems Research (N1) area. Alternatives 1, 2 and 4 propose to continue managing for motorized use of the Helmville/Gould trail through a designated Unroaded/Undeveloped (R1) area. Other than these two exceptions, the proposed travel plan alternatives, including alternative 1 (no action) are consistent with forestwide recreation standards in the 1986 Helena NF Forest Plan. Please see Appendix I for wording of the programmatic Forest Plan Amendment for Management Areas N1 and R1that would manage the CDNST through the proposed Granite Butte RNA (management area N1), and motorized use on the Helmville/Gould trail through the Nevada Mountain management area R1 area.
- Each action alternative would contain the component for the programmatic Forest Plan Big Game Security Amendment as well as Forest Plan Amendment for Management Areas N1 and R1 to managed trails in these areas. These are described in detail in chapter 2 and both

appendix F and I. The R1 and N1 amendment would differ slightly among the alternatives are discussed under each alternative below. The big game security amendment would have, in general, no measureable or long-term adverse impacts to recreation resources. Proposed route changes and seasons of use are a component of each travel plan action alternative and analyzed in detail in this section. Other aspects of recreation use related to hunting are evaluated in the wildlife section of this chapter and was considered in the development of this amendment alternative in consultation with MFWP biologists.

Compliance with Forest Plan and Other Relevant Laws, Regulations, Policies and Plans

All action alternatives are consistent with direction regarding recreation in the Forest Plan. All action alternatives also include a programmatic forest plan amendment for trails in Management Area R1 and N1 and also for big game security. See chapter 2 and appendix F and I for more details.

Roadless Areas

Affected Environment

A large portion of the Blackfoot travel planning area is composed of unroaded lands. These unroaded lands include seven inventoried roadless areas (IRAs) and one smaller area of unroaded land contiguous to the Specimen Creek Inventoried Roadless Area. The following table includes the approximate miles of existing motorized routes within the portion of these IRAs that are within the planning area.

Table 53. The acres and miles of each IRA in the planning area open to motorized activities

IRA	Approximate Acres of National Forest System land within the portion of the IRA that is also in the planning area	Miles of Motorized Routes within the portion of the IRA that is also in the planning area
Bear-Marshall-Scapegoat-Swan	57,945	23.77
Lincoln Gulch	8,245	0.20
Anaconda Hill	18,535	4.81
Specimen Creek	12,368	6.06
Crater Mountain	9,256	5.28
Ogden Mountain	12,143	12.07
Nevada Mountain	50,106	25.98

The analysis of IRAs and to the Specimen Creek unroaded expanse focuses on the effects that proposed changes to the road and trail system would have on identified wilderness attributes. These seven IRAs were analyzed using the same characteristics of the roadless area inventory (RARE II). Additionally, there is one small but contiguous unroaded area located outside of the Specimen Creek IRA, which was also analyzed using the same characteristics as the roadless area inventory (RARE II). This area was included with the analysis of the Specimen Creek IRA and this combined area is called the Specimen Creek unroaded expanse in this analysis.

Direction for the evaluation of unroaded lands for potential wilderness can be found in Forest Service Handbook (FSH) 1909.12(72). This handbook direction specifically defines wilderness characteristics for potential wilderness and how they should be evaluated.

No Forest Service regulations or laws prohibit development of unroaded areas. In addition, there are no forestwide or management area standards specific to unroaded areas. Although the one small contiguous unroaded area is not designated as wilderness or located within IRAs, the effects of the Blackfoot Travel Plan is assessed using the wilderness attributes identified in FSH 1909.12 and the 1964 Wilderness Act.

These seven IRAs areas were identified in the Helena Forest Plan, but they were not recommended as wilderness. For more details on each of these IRAs, see appendix C of the Helena National Forest Plan Final EIS. The forest plan also provides management direction that applies to these IRAs (pages III/1 through III/97).

Roadless Area Review and Evaluation (RARE I and RARE II)

The original inventory of unroaded lands within the planning area occurred in the early 1970s through the Roadless Area Review and Evaluation (RARE I) process, and again in the late 1970s during RARE II. The RARE II process was intended to evaluate the potential for unroaded areas to be included in the national wilderness system.

A RARE II inventory was completed on the Helena National Forest in anticipation of development of the Forest Plan which was completed in 1986. Appendix C of the Forest Plan EIS analyzed all of the IRAs and rated them for wilderness suitability.

The Forest Plan also provides management direction that applies to these IRAs (pages III/1 through III/97). Some of the IRAs were ultimately selected in the Helena Forest Plan decision as recommended wilderness (P-3 management areas totaling 32,900 acres). These were in addition to the designated wilderness areas (Scapegoat and Gates of the Mountains totaling 111,600 acres). Some IRAs were not recommended for wilderness but instead have Forest Plan direction to maintain their unroaded character for semi-primitive recreation and for wildlife values (R1 totaling 34,300 acres and E-2 totaling 22,200 acres). There are two R1 areas within the project boundary (Silver King/Falls Creek and Nevada Mountain). These R1 areas were designated as “undeveloped land suited for dispersed recreation.” They provide opportunities for semi-primitive non-motorized recreation and are characterized predominantly by natural or natural-appearing environments where there is a high probability of isolation from man’s activity. Both R1 management areas are located within designated IRAs. The Roadless Report in the project record provides more detail on the specific Management Areas relevant to the analysis of the IRAs and unroaded lands contiguous to the Specimen Creek IRA.

2001 Roadless Rule

The 2001 Roadless Rule provides management direction for timber cutting, sale, or removal, and road construction/reconstruction (36 CFR 294 Subpart B (66 FR 3244) January 12, 2001). Semi-primitive motorized recreation is an acceptable activity within the IRAs as motorized trails and associated use are not prohibited under the 2001 Roadless Rule (66 FR 3251).

Recreation Opportunity Spectrum Guidance

Forest Service recreation management is guided by a Recreation Opportunity Spectrum (ROS) that allocates outdoor recreation opportunities and activities by natural resource setting. Approximately 54 percent of the planning area is located within the “Roaded Natural” ROS category, meaning that timber harvest or other surface use practices are evident and motorized vehicles are permitted on all parts of the road system. The distribution of summer ROS classes in the Blackfoot Non-Winter Travel Plan planning area is shown in table 54 that follows. The acres displayed include only those acres within the seven IRAs boundaries.

Table 54. ROS distribution within IRAs in the planning area

ROS Category	Acres	Percent of Area
Semi-primitive Non-motorized	29,536	12
Semi-primitive Motorized	80,241	33
Roaded Natural	129,232	54
Rural	159	<1
Primitive	2,083	<1
Total	**241,342**	**100**

The roaded natural and semi-primitive motorized categories dominate because of past and current development, such as roads and associated mining and timber harvest. The largest tracts of semi-primitive non-motorized areas are located in the IRAs.

Environmental Consequences

Methodology

We used Helena National Forest GIS data and local resource-specific knowledge of the Blackfoot travel planning area in this analysis.

Unroaded landscapes have a number of values or features which may separate them from other forest landscapes. The purpose of the analysis of IRAs and unroaded land contiguous to the Specimen Creek IRA is to disclose potential effects to wilderness attributes and determine if, or to what extent, proposed changes might affect future consideration for wilderness recommendations.

FSH 1909.12 (72) identifies attributes used to determine the capability of an unroaded area to be considered for future wilderness designation. We used these characteristics as indicators to measure effects of the project upon the IRAs and unroaded lands contiguous to the Specimen Creek IRA within the planning area. However, there are no established thresholds that apply to these indicators. Rather, the indicators are evaluated along a continuum to determine the amount of change and potential affects upon wilderness characteristics.

- Natural – The extent to which long-term ecological processes are intact and operating.
- Undeveloped – The degree to which the impacts documented in natural integrity are apparent to most visitors.
- Outstanding Opportunities for Solitude or Primitive and Unconfined Recreation – Solitude is a personal, subjective value defined as the isolation from sights, sounds and presence of others, and from developments and evidence of humans. Primitive recreation is characterized by meeting nature on its own terms, without comfort and convenience of facilities.
- Special Features – Unique ecological, geographical, scenic, and historical features of an area.
- Manageability – The ability to manage an area for wilderness consideration and maintain wilderness attributes.

This analysis focuses on the potential effects of project activities on wilderness characteristics as defined in FSH 1909.12 (72.1) by comparing the alternatives to the existing baseline (alternative 1). In addition to wilderness attributes, the IRAs and unroaded lands contiguous to Specimen Creek IRA may contain roadless characteristics. Table 55 shows the crosswalk between the wilderness attributes and the roadless area characteristics. Potential effects to other roadless values are evaluated elsewhere as they relate to specific resources. This analysis focuses on wilderness characteristics and compares any changes to the existing conditions of the IRAs, as well as the one contiguous unroaded area within the planning area.

Table 55. Crosswalk between wilderness attributes and roadless area characteristics

Wilderness Attributes	Roadless Area Characteristics
Natural (ecological systems are substantially free from the effects of modern civilization and generally appear to have been affected by forces of nature)	High quality or undisturbed soil, water and air; Sources of drinking water; Diversity of plant and animal communities; Habitat for threatened, endangered, proposed, candidate, and sensitive species for those species dependent on large, undisturbed areas of land; Reference landscapes
Undeveloped (degree to which the area is without permanent improvements or human habitation)	Natural-appearing landscapes with high scenic quality
Outstanding Opportunities for Solitude or Primitive and Unconfined Recreation Solitude: opportunity to experience isolation from the sights, sounds, and presence of others from the developments and evidence of humans Primitive and Unconfined Recreation: opportunity to experience isolation from the evidence of humans, to feel a part of nature to have a vastness of scale, and a degree of challenge and risk while using outdoor skills	Primitive, semi-primitive non-motorized and semi-primitive motorized classes of dispersed recreation
Special Features and Values (capability of the area to provide other values such as those with geologic, scientific, educational, scenic, historical, or cultural significance)	Traditional cultural properties and sacred sites; and other locally identified unique characteristics
Manageability (the ability of the Forest Service to manage an area to meet the size criteria and the elements of wilderness)	No criteria

Resource Indicators and Measures

The purpose of this analysis is to evaluate the environmental consequences of the proposed action and alternatives on wilderness characteristics of IRAs and contiguous roadless area expanse.

Quality Non-motorized Trail/Route System: Changes in the transportation system have the most potential to affect the quality of the recreation experience. Reductions in non-motorized routes could adversely impact this experience while increases could result in beneficial effects to the overall non-motorized experience. The numbers of miles of roads and trails that are open to wheeled motorized travel both yearlong and seasonally would provide the measurement indicator for the IRAs and unroaded lands contiguous to the Specimen Creek IRA in the planning area.

Additionally, roadless area quality is measured by changes to the wilderness attributes identified for the IRAs. This analysis also measures how changes to the motorized and non-motorized trail system affect these wilderness attributes.

Semi-primitive motorized recreation is an acceptable activity within IRAs, as motorized trails and associated use are not prohibited within IRAs under the 2001 Roadless Rule (66 FR 3251).

This effects analysis considers the seven IRAs (and one contiguous unroaded area) within the Blackfoot travel planning area. Effects are measured using the following indicators:

- Miles of motorized routes (roads or trails open to wheeled motorized travel) in IRAs
- Miles of non-motorized routes in IRAs
- Potential changes to wilderness attributes of IRAs and unroaded areas

Effects Common to All Alternatives

Routine maintenance and reconstruction and construction of non-motorized and motorized trails could include the use of both mechanized equipment and hand tools. This could indirectly affect the sense of solitude and naturalness while these activities occur. The effect of trail work would be short term and result in minimal impacts to wilderness characteristics. However, the better the condition of the trails, the more popular they often become. Increased use of trails within IRAs could impact the opportunity for solitude and primitive recreation.

Effects Common to All Action Alternatives

Under the three action alternatives, some of the wilderness characteristics within IRAs and contiguous unroaded areas would be impacted. The extent of those impacts is dependent upon the number of miles of motorized and non-motorized routes that would be authorized under each alternative. Additionally, changes may impact the wilderness attributes of the IRAs and the unroaded lands contiguous to Specimen Creek Inventoried Roadless Area. Any change in the type and amount of trail use within IRAs or unroaded area may cause some displacement of forest users.

The proposal to programmatically amend the Helena National Forest Plan regarding the standard for the big game security index would establish a new big game security standard and would apply to those herd units within the planning area boundary under any of the action alternatives. This amendment would not cause short- or long-term effects to the wilderness attribute of the IRAs, or the unroaded lands contiguous to the Specimen Creek IRA within the planning area.

All of the action alternatives would allow wheeled motorized vehicle travel within 300 feet of the edge of designated system routes for the purpose of dispersed camping and parking for dispersed camping, with certain resource protection measures as described in chapter 2. Motorized use within this 300 foot zone would have minimal change from the existing condition in all of the IRAs and the Specimen Creek unroaded expanse since much of this activity is already occurring on those portions of the landscape most appropriate for this use. The impacts of any activity in the 300 foot zone would most affect the undeveloped and the opportunity for solitude and primitive recreation wilderness attributes.

Effects to the IRAs as a result of motorized route management are mostly related to the closure and decommissioning of the roads and trails, and any signing that may need to occur to identify roads and trails that are open to motorized use (chapter 2). These signs would create a slight impact to the undeveloped wilderness attribute but would otherwise have no effect to the overall character of the IRAs within the planning area.

Road storage and decommissioning is proposed at varying levels for all action alternatives. Actions necessary to place a road in storage would leave the prism of the road on the landscape but would leave the road unusable to motorized use. Decommissioned roads would be made impassible to wheeled vehicles. Due to the short-term soil disturbance and noise created by the heavy equipment used for implementation, both of these activities would create short-term effects to IRA wilderness attributes during the implementation period. These actions would cause the most negative effects to the undeveloped, and the opportunity for solitude and pristine recreation wilderness attributes. In the long term, however, decommissioning and road storage activities would improve all of the wilderness attributes, creating an overall gain for the IRAs.

Programmatic Forest Plan Amendments for Management Area N1 and R1 and for Big Game Security

A programmatic Forest Plan Amendment for Management Areas N1 and R1 to address trails is being proposed as a part of this travel plan analysis.

It addresses the location of a segment of the CDNST within a portion of N1 near Granite Butte. The Helena Forest Plan indicates that “dispersed recreation facilities, such as trails or trailhead developments will not be allowed” within N1 lands. This part of the proposed Forest Plan amendment would exempt that portion of the CDNST that crosses these N1 lands from this standard; allowing for this trail and dispersed recreation activity to continue. Since this area is not located within an IRA or an unroaded area contiguous to an IRA, the proposed amendment would have no effect.

It also addresses Management Area R1 in the Nevada Mountain IRA. The guiding language in Management Area R1 states “Motorized vehicles are not allowed within the management area. Exceptions may be allowed on a case-by-case basis where motorized vehicles are needed for legitimate mineral use.” Additionally, the Nevada Mountain IRA was designated as non-motorized in the 1986 Helena National Forest Plan. However, Helmville-Gould Trail #467, a motorized trail, passes across management area R1 lands and is clearly located within the Nevada Mountain IRA boundary. The motorized use on this trail is historic and was established prior to the Helena Forest Plan. Incorporating this use into the plan is programmatic only and would not result in a change from the current condition. For this reason, allowing continued motorized use on this segment of trail would have no effect on the Nevada Mountain IRA.

Alternative 1 – No Action

Direct and Indirect Effects

The no-action alternative would leave the current unroaded character unchanged from the descriptions presented in the Affected Environment section. Existing wilderness characteristics would not be enhanced or diminished in any of the IRAs or unroaded areas.

Cumulative Effects

Because there would be no direct or indirect effects from implementing alternative 1, there would be no cumulative effects.

Compliance with Forest Plan and Other Relevant Laws, Regulations, Policies and Plans

The Blackfoot travel planning area consists of Forest Plan management area designations which allow for wheeled motorized routes with two exceptions. As described in more detail in chapter 2, the current travel plan includes continued management of existing trails within the R1 and N1 management area that is not in compliance with the management direction for these areas.

Alternative 2

Design Features and Mitigation Measures

There are no project design features specific to unroaded areas; all design features are listed in chapter 2.

Direct and Indirect Effects

Under alternative 2, there would be an overall decrease of 18 miles of motorized routes within IRAs and the Speciment Creek unroaded expanse, and an increase of 18 miles of non-motorized routes. This change would enhance the undeveloped character and opportunity for solitude within several of the IRAs.

Direct effects occur at the time and place the action is implemented. When actions are implemented to reclaim, restore, construct, reconstruct or place into storage any route –either motorized or non-motorized—there is a direct effect to the wilderness attributes associated with those actions. These direct effects include the visual and audio intrusion of equipment and people into and adjacent to the IRAs and unroaded expanse. These direct effects are limited to the length of time needed to complete the action and are generally noted by the increase or decrease in the number of miles of implementation and the “undeveloped” and “manageability” wilderness attribute descriptions.

The indirect effects are those effects that may occur after the action is complete or result from a qualitative change to the IRA or unroaded expanse as a result of the action. In the case of proposed activities in alternative 2, many of the direct effects of the proposed actions will have positive indirect effects and benefits to the wilderness attributes of the IRAs and unroaded expanse. These indirect effects are most noted in the wilderness attributes of “undeveloped” and “outstanding opportunities for solitude or primitive unconfined recreation”.

A discussion of the proposed changes in each IRA, including effects to wilderness attributes follows. Maps in the project record show boundaries of each IRA.

Bear-Marshall-Scapegoat and Silver King-Falls Creek IRA

The miles of motorized routes within this IRA would decrease by approximately 8 miles (this involves the closure of several small road segments along the IRA boundary) and the miles of non-motorized routes would increase by approximately 4 miles (this involves the conversion of the Stonewall/Copper #485 and Stonewall Mountain #418 trails to non-motorized routes).

Implementation of alternative 2 would result in the designation of about 10 miles of mountain bike routes within this IRA, including 1 mile of new trail designated for mountain bikes and pedestrians.

Wilderness Attributes

Implementing alternative 2 would not change the natural character or the special features and values of the Bear-Marshall-Scapegoat and Silver King-Falls Creek IRA. The undeveloped character would change somewhat because approximately 1.5 miles of existing road would be stored and 4.8 miles would be decommissioned, enhancing the undeveloped character of this IRA. These changes would initially be very obvious but would diminish over time. In the long term, these changes would improve the “undeveloped” wilderness attribute of this IRA.

With a reduction in motorized routes and an increase in non-motorized trails, the opportunity for solitude and primitive recreation would be enhanced under alternative 2. In the long term, the reduction in motorized access into this IRA would most likely facilitate improved management of the IRA.

Lincoln Gulch IRA

There is currently only 0.2 mile of motorized route within this IRA and implementing alternative 2 would eliminate this route. Implementation of alternative 2 would result in the designation of about 5 miles of new mountain bike routes within this IRA designated for mountain bikes and pedestrians.

Wilderness Attributes

Implementing alternative 2 would not change the natural character, special features and values or manageability of the Lincoln Gulch IRA. The undeveloped character would change somewhat because approximately 0.3 mile of existing road would be stored, slightly enhancing the undeveloped character of this IRA but the construction and use of 5 miles of new mountain bike trail would slightly decrease the undeveloped character.

Although mountain biking is a non-motorized activity, that use may diminish the opportunity for solitude and primitive recreation in a portion of the IRA.

Anaconda Hill IRA

The miles of motorized routes within this IRA would decrease by approximately 4.4 miles; only short spurs, about 0.4 mile in total length, which are currently present along the west border of the IRA, would continue to be open for motorized travel. The existing 10-mile segment of the Continental Divide National Scenic Trail, which passes through this IRA (Rodgers Pass to Flesher Pass), would continue to be managed for non-motorized use as currently exists. There are no designated mountain bike trails within this IRA and this would not change with implementation of alternative 2.

Wilderness Attributes

Implementing alternative 2 would not change the natural character or the special features and values of the Anaconda Hill IRA. The undeveloped character would change somewhat because approximately 4.4 miles of existing road would be closed and 9 miles of existing road would be stored, enhancing the undeveloped character of this IRA.

With a closure and storage of existing roads, the opportunity for solitude and primitive recreation would be enhanced under alternative 2, but this closure would reduce the ability to manage this IRA and protect existing wilderness characteristics.

Specimen Creek IRA

The only existing trail within the unroaded expanse is the Continental Divide National Scenic Trail (Trail # 440), which would continue to be managed for a combination of non-motorized use and single track motorized use (motorcycles). Implementation of alternative 2 would result in the designation of about 3.6 miles of mountain bike routes in the IRA. By reviewing the GIS data layers for this analysis, there would be an approximate 0.2-mile increase in motorized trail within the unroaded expanse under alternative 2. This is due to the following:

- A small segment (0.061 mile) of Road 4113 was labeled “naturally reclaimed” in alternative 1, the existing condition. After field review, it was determined that this was labeled incorrectly. This segment of Road #4113 within Specimen Creek is actually open to highway legal vehicles. For this reason, this small segment of road is not actually increasing motorized use in this area but keeping motorized use on this currently open route.

- Two small road segments, 1841 and 1841-D1, are identified as roads closed to motorized use in alternative 1, the existing condition. These roads would be converted to motorized trails in alternative 2. No road or trail construction would be necessary to make this conversion and this use would be allowed on currently existing routes. Please see the map in the Roadless Area Report in the project record for details on these segments.

For these reasons, there would not be an increase in new miles of motorized routes in alternative 2. However, the change from closed to open for routes 1841 and 1841-D1 would not be entirely consistent with direction for IRA management; a project design feature has been developed (see chapter 2) to ensure this aspect of alternative 2 would be addressed prior to implementation to ensure wilderness attributes would not be adversely impacted.

Wilderness Attributes

Implementing alternative 2 would not change the natural character or the special features and values of the Specimen Creek IRA. The undeveloped character would change somewhat because approximately 0.8 mile of existing road would be stored, slightly enhancing the undeveloped character of this IRA.

The designation of 3.6 miles of mountain bike routes may slightly decrease the opportunity for solitude and primitive recreation. Continuing motorized single-track use on the CDNST may impact the opportunities for solitude and primitive recreation along this national trail.

Crater Mountain IRA

The miles of motorized routes within this IRA would decrease by approximately 1 mile and non-motorized routes would increase; implementing alternative 2 would result in the designation of about 6.7 miles of new mountain bike routes with most of this (6.6 miles) being new construction.

Wilderness Attributes

Implementing alternative 2 would not change the natural character or the special features and values of the Crater Montain IRA. The undeveloped character would change somewhat because approximately 1 mile of existing road would be stored and approximately 3 miles or existing road would be decommissioned, enhancing the undeveloped character of this IRA.

Although mountain biking is a non-motorized activity, this use may diminish the opportunity for solitude and primitive recreation in this IRA. The reduction of motorized routes through storage and decommissioning could slightly improve the ability to manage the IRA to protect wilderness character.

Ogden Mountain IRA

The miles of motorized routes would decrease by approximately 4 miles and two existing trail segments (Sauerkraut Trail # 401 and Ogden Mountain Trail # 404) would be managed for non-motorized use. There would be no designated mountain bike routes within this IRA.

Wilderness Attributes

Implementing alternative 2 would not change the natural character or special features and values of the Ogden Mountain IRA. The undeveloped character could change somewhat because approximately 1 mile of existing road would be stored. The Roadless Report (Payne 2012) in the project record provides more detail on how each road and trail is managed.

The reduction of about 4 miles of motorized routes could enhance the wilderness character by increasing opportunities for solitude and primitive recreation and improving the ability to manage the IRA and protect its wilderness characteristics.

Nevada Mountain IRA

There would be no reduction in the miles of motorized or non-motorized routes. The popular Helmville/Gould Trail # 467 would be managed for both motorized use and mountain bikes.

Wilderness Attributes

Implementing alternative 2 would not change the natural character, special features or manageability of the Nevada Mountain IRA. The undeveloped character could change somewhat based on the storage of 0.2 mile of existing road.

Cumulative Effects

The cumulative effects analysis area boundary is the same for the IRAs and the unroaded expanse contiguous with the Specimen Creek IRA.

Implementing alternative 2 in combination with other past, present, and reasonably foreseeable future actions (appendix D), would result in some minor impacts to roadless character and wilderness characteristics. While implementing alternative 2 would impact forest resources through road closure, storage and decommissioning, and new road and trail construction, these effects would not result in an overall adverse impact to the roadless character of the seven IRAs and the unroaded expanse, and, for several of the IRAs (as discussed above), these actions would result in an overall beneficial impact to wilderness characteristics. Combining these direct and indirect effects with other activities described in appendix D would result in cumulative effects, as follows:

Livestock grazing – Livestock affects wilderness character by the presence of structures used to manage the livestock: gates, fences, and water improvements. The presence of livestock also affects the characteristics of remoteness and solitude. In addition, as a result of the grazing, landscapes may appear to have shorter grasses. However, overall, these impacts would have minimal effects to the wilderness characteristics of the IRAs. The amount of grazing which occurs in the Bear-Marshall-Scapegoat-Swan IRA and Nevada Mountain IRA is minimal.

Noxious Weed Treatments – Noxious weeds are typically treated along roads using mechanized equipment. Hand treatments can occur in patches that are off the roads. Livestock and biological agents may also be used. The presence of mechanized equipment and livestock could affect a user’s sense of remoteness and solitude. Using hand treatments and biological agents would have a minimal effect. The sight of dead weeds, regardless of treatment type, may also affect one’s sense of remoteness and solitude. However, overall, these effects would have minimal impacts to the wilderness characteristics of the IRAs.

A Record of Decision for Noxious Weed Treatment on the west side of the Helena National Forest was signed in November 2006. That decision did allow aerial spraying of noxious weeds in the Ogden Mountain and Nevada Mountain IRAs. When that activity occurs, about every three years, solitude within those IRAs would be diminished.

Hazard Tree Removal – In an effort to ensure public safety, a Forestwide Hazardous Tree Removal Project was initiated. Approximately 12 miles of National Forest System roads within the planning area IRAs were approved for hazard tree removal. Hazard trees within 125 feet on either side of the road were felled. If hazard trees were removed along the entire 250–foot-wide segment of those 12 miles of road, approximately 364 acres of IRAs would be impacted. It's important to note that hazard trees were not uniformly present along all 12 miles of those roads.

Roadside hazard tree removal opens the road corridor, making the road(s) more visible from within and around the IRAs. The sights and sounds of the mechanized equipment used during operations also have a short-term impact. These could affect the sense of naturalness and solitude. Over time, as the vegetation and trees grow back within the road corridor, the effects would decrease.

Road Maintenance – There are numerous roads within and adjacent to the IRAs which require periodic road maintenance. The sight and sound of operating road equipment may indirectly affect the sense of solitude or remoteness. However, these effects are short-term and the overall wilderness character would not be affected by these activities.

Private Timber Harvest – Private timber harvest on lands within sight distance of IRAs would further reduce the natural integrity and feelings of solitude and remoteness. Associated harvest activities, including hauling, would have an impact upon the natural integrity, and sense of solitude and remoteness in adjacent IRAs.

Compliance with Forest Plan and Other Relevant Laws, Regulations, Policies and Plans

The Blackfoot travel planning area consists of Forest Plan management area designations that allow for wheeled motorized routes with two exceptions. As described in more detail in chapter 2, alternative 2 would include continued management of an existing motorized trail in management areas N1 and R1 that is not in compliance with the management direction for these areas. A programmatic Forest Plan amendment would be necessary for continuing these uses. With implementation of project design features, potential effects from this travel plan proposal would not harm or degrade the identified wilderness characteristics of the IRAs.

For more details on compliance with the Helena Forest Plan, see appendix A; and for more details on compliance with other regulations and policy, see the Roadless Area Report (Payne and Casselli 2013) available in the project record.

Other Relevant Mandatory Disclosures

There would be no irreversible or irretrievable commitments with implementing alternative 2 because any roads or trails authorized under this travel plan decision could be obliterated and revegetated.

Summary of Effects

Under alternative 2 the total miles of road and trail open to wheeled motorized vehicles within the IRAs and Specimen Creek unroaded expanse would decrease by approximately 18 miles. Inversely, the number of miles of non-motorized trail would increase about 18 miles. This change would enhance both the undeveloped character, as well as, improve the opportunity for solitude within several of the IRAs. The manageability of the IRAs would not substantially change due to the presence of remaining roads, private lands, mining claims, and topography.

Alternative 3

Design Features and Mitigation Measures

There are no project design features specific to unroaded areas; all design features are listed in chapter 2 starting on page 42.

Direct and Indirect Effects

Direct effects occur at the time and place the action is implemented. When actions are implemented to reclaim, restore, construct, reconstruct or place into storage any route –either motorized or non-motorized—there is short-term direct effects to the wilderness attributes associated with those actions. These direct effects include the visual and audio intrusion of equipment and people into and adjacent to the IRAs and unroaded expanse. These direct effects are limited to the length of time needed to complete the action and are generally noted by the increase or decrease in the number of miles of routes and the “undeveloped” and “manageability” wilderness attribute descriptions.

The indirect effects are those effects that may occur after the action is completed, and may result from a qualitative change to the IRA or unroaded expanse as a result of the action. For proposed activities in alternative 3, many of the direct effects will have positive indirect effects and benefits to the wilderness attributes of “undeveloped” and “outstanding opportunities for solitude or primitive unconfined recreation” because there would be an overall decrease of 45 miles of motorized routes within IRAs and an increase in 24 miles of non-motorized routes; an increase of approximately 6 miles more than alternative 2.

This change would enhance the undeveloped character and opportunity for solitude within several of the IRAs. If alternative 3 were implemented, there would be a total of 31 miles of motorized routes and approximately 95 miles of non-motorized routes in IRAs. A discussion of the proposed changes in each IRA, including effects to wilderness attributes, is included below. The alternative maps in appendix G show the boundaries of each IRA.

Bear-Marshall-Scapegoat and Silver King-Falls Creek IRA

As with alternative 2, the miles of motorized routes within this IRA would decrease by approximately 11 miles under alternative 3 (this involves the closure of several small road segments along the IRA boundary). Some existing spur roads in the Alice Creek drainage would be closed and decommissioned. Implementation of alternative 3 would result in the conversion of 12.1 miles of existing motorized trails into non-motorized trails within the IRA. This includes the following existing trails: Stonewall/Copper # 485 and Stonewall Mountain # 418. Implementation of this alternative would also result in the designation of about 10 miles of mountain bike routes in the IRA. That includes approximately 1 mile of new trail designated solely for mountain bikes and pedestrians

Wilderness Attributes

Implementing alternative 3 would not change the natural character or the special features and values of the Bear-Marshall-Scapegoat and Silver King-Falls Creek IRA. The undeveloped character would change somewhat because approximately 1.3 miles of existing road would be stored and 7.3 miles would be decommissioned, enhancing the undeveloped character of this IRA.

With a reduction in motorized routes and an increase in non-motorized trails, the opportunity for solitude and primitive recreation would be enhanced under alternative 3. In the long term, the reduction in motorized access into this IRA would most likely facilitate improved management of the IRA. Initially, the Forest Service may need to increase signing and enforcement to ensure compliance with any new motorized restrictions.

Lincoln Gulch IRA

There is currently 0.2 mile of motorized route within this IRA, and implementing alternative 3 would eliminate this route. Implementation of alternative 3 would result in the designation of about 4 miles of new mountain bike routes within this IRA that would slightly impact the opportunity for solitude.

Wilderness Attributes

Implementing alternative 3 would not change the natural character, special features and values, or manageability of the Lincoln Gulch IRA. The undeveloped character would change somewhat because approximately 0.3 mile of existing road would be stored and approximately 1.6 miles would be decommissioned, enhancing the undeveloped character of this IRA.

Although mountain biking is a non-motorized activity, that use may diminish the opportunity for solitude and primitive recreation in a portion of the IRA.

Anaconda Hill IRA

The miles of motorized routes within this IRA would decrease by approximately 3.4 miles; the remaining 1.4 miles of open motorized routes would be located near the middle of the IRA. The existing 11-mile segment of the Continental Divide National Scenic Trail, which passes through this IRA (Rodgers Pass to Flesher Pass), would continue to be managed for non-motorized use as currently exists. There are no designated mountain bike trails within this IRA, and this would not change with implementation of alternative 3.

Wilderness Attributes

Implementing alternative 3 would not change the natural character or the special features and values of the Anaconda Hill IRA. The undeveloped character would change substantially because approximately 3.4 miles of existing road would be closed and 25.1 miles of existing road would be decommissioned. However, the presence of 1.4 miles of road near the middle of this IRA could somewhat negate this benefit.

With the closure and decommissioning of existing roads, the opportunity for solitude and primitive recreation would be greatly enhanced under alternative 3.

Specimen Creek IRA and Unroaded Expanse

The miles of motorized routes within this IRA would decrease by approximately 5 miles; a short 0.1-mile segment of motorized trail would remain open to wheeled motorized use on the border of the IRA. The 3.6-mile Continental Divide National Scenic Trail segment located between Flesher Pass and Stemple Pass through this IRA would be closed to motorized vehicles (motorcycles) and managed as a non-motorized trail. Although motorcycle use on this trail segment is likely not frequent, it has been an established activity for over 30 years and this would change with implementation of alternative 3.

Like alternative 2, implementation of this alternative would result in the designation of about 3.6 miles of mountain bike routes within this IRA.

Wilderness Attributes

Implementing alternative 3 would not change the natural character or the special features and values of the Specimen Creek IRA. The undeveloped character would be enhanced with the reduction of 5 miles of motorized routes. Prohibiting motorcycle use along the Continental Divide National Scenic Trail in this IRA would improve the undeveloped character of this IRA. These changes would also increase the opportunity for solitude and primitive recreation and improve the ability to manage the IRA to protect its wilderness character.

Crater Mountain IRA

Alternative 3 would reduce motorized routes in this IRA by approximately 4.4 miles, and would also result in the construction and designation of about 6 miles of new mountain bike routes.

Wilderness Attributes

Implementing alternative 3 would not change the natural character or the special features and values of the Specimen Creek IRA. The undeveloped character would change somewhat because approximately 1 mile of existing road would be stored and approximately 11.5 miles or existing road would be decommissioned, enhancing the undeveloped character of this IRA.

Although mountain biking is a non-motorized activity, this use may diminish the opportunity for solitude and primitive recreation in this IRA, but the reduction of motorized routes through storage and decommissioning could improve the ability to manage the IRA to protect its wilderness character.

Ogden Mountain IRA

Alternative 3 proposes to reduce motorized routes approximately 3.8 miles within this IRA. Additionally, two existing trail segments (Sauerkraut Trail #401 and Ogden Mountain Trail #404) would be managed for non-motorized use in this alternative. No mountain bike trails were identified within this IRA in alternative 3.

Wilderness Attributes

Implementing alternative 3 would not change the natural character or special features and values of the Ogden Mountain IRA. The undeveloped character could change somewhat because of an approximate 3.8 miles reduction in motorized routes.

The reduction of about 4 miles of motorized routes along with decommissioning could enhance the wilderness character by increasing opportunities for solitude and primitive recreation and improving the ability to manage the IRA and protect its wilderness characteristics.

Nevada Mountain IRA

Alternative 3 would reduce motorized routes within this IRA by approximately 16.4 miles. That is primarily reflected in the proposed changes on the Helmville/Gould Trail (Trail # 467) and Prickly/Nevada Trail (Trail # 487). Both of these trails would be managed for non-motorized use only in alternative 3.

There are currently approximately 15.6 miles of non-motorized trails within the IRA. This alternative would increase that number by approximately 15 miles to a total of 30.6 miles of non-motorized trail.

Wilderness Attributes

Implementing alternative 3 would not change the natural character or special features of the Nevada Mountain IRA. The undeveloped character could change somewhat based on the storage of 0.2 mile of existing road and the decommissioning of 1.9 miles of existing road. The reduction of approximately 16 miles of motorized routes would enhance the undeveloped character and increase the manageability of wilderness characteristics, but the opportunity for primitive recreation may be limited if the Helmville/Gould trail becomes a popular mountain bike route.

Cumulative Effects

Cumulative effects would be the same as those described for alternative 2.

Compliance with Forest Plan and Other Relevant Laws, Regulations, Policies and Plans

The Blackfoot travel planning area consists of Forest Plan management area designations that allow for wheeled motorized routes, with two exceptions. As described in more detail in chapter 2, alternative 3 would include continued management of a non-motorized trail in management area N1. A Forest Plan amendment would be necessary for continuing this use. Potential effects from this travel plan proposal would not harm or degrade the identified wilderness characteristics of the IRAs.

For more details on compliance with the Helena Forest Plan, see appendix A; and for more details on compliance with other regulations and policy, see the Roadless Area Report (Payne and Casselli 2013) available in the project record.

Other Relevant Mandatory Disclosures

There would be no irreversible or irretrievable commitments with implementing alternatives because any roads or trails authorized under this travel plan decision could be obliterated and revegetated.

Summary of Effects

Under alternative 3, the number of miles of road and trail open to wheeled motorized vehicles within the IRAs and unroaded expanse would decrease by approximately 45 miles. Miles of non-motorized trail would increase by about 24 miles. That represents an increase of approximately 6 miles more than alternative 2 and would result in beneficial effects to the wilderness characteristics of these areas.

Alternative 4

Design Features and Mitigation Measures

There are no project design features specific to unroaded areas; all design features are listed in chapter 2.

Direct and Indirect Effects

Direct effects occur at the time and place the action is implemented. When actions are implemented to reclaim, restore, construct, reconstruct or place into storage any route –either motorized or non-motorized—there is a direct effect to the wilderness attributes associated with those actions. These direct effects include the visual and audio intrusion of equipment and people into and adjacent to the IRAs and unroaded expanse. These short-term direct effects are limited to the length of time needed to complete the actions and are generally noted by the increase or decrease in the number of miles of routes and the “undeveloped” and “manageability” wilderness attribute descriptions.

The indirect effects are those effects that may occur after the action is complete or result from a qualitative change to the IRA or unroaded expanse as a result of the action. In the case of proposed activities in alternative 4, many of the direct effects of the proposed actions will have positive indirect effects and benefits to the wilderness attributes of the IRAs and unroaded expanse. These indirect effects are most noted in the wilderness attributes of “undeveloped” and “outstanding opportunities for solitude or primitive unconfined recreation”.

Under alternative 4 the number of miles of road and trail open to wheeled motorized vehicles within the IRAs and unroaded expanse would decrease by approximately 10 miles. The number of miles of non-motorized routes would increase by about 12 miles. Approximately, 7.2 miles of existing roads would be decommissioned.

Bear-Marshall-Scapegoat and Silver King-Falls Creek IRA

As with alternative 2 and 3, the miles of motorized routes within this IRA would decrease by approximately 11 miles under alternative 4 (this involves the closure of several small road segments along the IRA boundary). Some existing spur roads in the Alice Creek drainage would be closed and decommissioned. Implementation of alternative 4 would result in the conversion of 14 miles of existing motorized trails into non-motorized trails within the IRA. This includes the following existing trails: Stonewall/Copper # 485 and Stonewall Mountain # 418. Implementation of this alternative would also result in the designation of about 10 miles of mountain bike routes in the IRA. That includes approximately 1 mile of new trail designated for mountain bikes and pedestrians.

Wilderness Attributes

Implementing alternative 4 would not change the natural character or the special features and values of the Bear-Marshall-Scapegoat and Silver King-Falls Creek IRA. The undeveloped character would change somewhat because approximately 1 mile of existing road would be stored and 7 miles would be decommissioned, enhancing the undeveloped character of this IRA.

With a reduction in motorized routes and an increase in non-motorized trails, the opportunity for solitude and primitive recreation would be enhanced under alternative 4. In the long term, the reduction in motorized access into this IRA would most likely facilitate improved management of the IRA. Initially, the Forest Service may need to increase signing and enforcement to ensure compliance with any new motorized restrictions.

Lincoln Gulch IRA

There is currently only 0.2 mile of motorized route within this IRA, and implementing alternative 4 would eliminate this route.

Wilderness Attributes

Implementing alternative 4 would not change the natural character, special features and values, or manageability of the Lincoln Gulch IRA. The undeveloped character would change somewhat because less than 1 mile of existing road would be stored and approximately 2 miles would be decommissioned, eliminating all motorized use and enhancing the undeveloped character of this IRA.

Anaconda Hill IRA

The miles of motorized routes within this IRA would decrease by approximately 3 miles; the remaining less than 2 miles of open motorized routes would be located near the middle of the IRA. Approximately 25 miles of road or trail decommissioning will also take place in alternative 4. There are no designated mountain bike trails within this IRA.

Wilderness Attributes

Implementing alternative 4 would not change the natural character or the special features and values of the Anaconda Hill IRA. The undeveloped character would change substantially because approximately 3 miles of existing road would be closed, and 25 miles of existing road would be decommissioned. However, the presence of less than 2 miles of road near the middle of this IRA could somewhat negate this benefit.

With the closure and decommissioning of existing roads, the opportunity for solitude and primitive recreation would be greatly enhanced under alternative 4.

Specimen Creek IRA and Unroaded Expanse

Alternative 4 proposes a reduction of approximately 5 miles of road within the Specimen Creek unroaded expanse. Only a 0.1-mile segment of motorized trail on the IRA border would remain open to wheeled motorized vehicles. Approximately 5 miles of existing roads would be decommissioned in this alternative. Implementation of this alternative would result in the designation of about 4 miles of mountain bike routes in the unroaded expanse.

The roughly 4-mile CDNST trail segment located between Flesher Pass and Stemple Pass currently open to single track motorized vehicles (motorcycles) within this unroaded expanse would be closed to that use.

Wilderness Attributes

Implementing alternative 4 would not change the natural character or the special features and values of the Specimen Creek IRA. The undeveloped character would be enhanced with the reduction of 5 miles of motorized routes. Approximately, 4 miles of mountain bike trails would be designated in this alternative. This non-motorized use would take place on existing trail systems and would have a limited effect to the undeveloped wilderness attribute. Although mountain biking is a non-motorized activity, the increase in use on the mountain bike trails may slightly diminish the opportunity for solitude and primitive recreation in that portion of the unroaded expanse where the trails are located. These changes would also improve the ability to manage the IRA to protect its wilderness character.

Crater Mountain IRA

Alternative 4 proposes a reduction of approximately 4.5 miles of motorized route within this IRA. About 11 miles or existing routes would be fully decommissioned and about 1 mile of road would be placed into storage. About 1 mile of trail would be opened seasonally to motorized use.

Wilderness Attributes

Implementing alternative 4 would not change the natural character or the special features and values of the Crater Mountain IRA. The undeveloped character would change somewhat because approximately 1 mile of existing road would be stored, and approximately 11 miles of existing road would be decommissioned, enhancing the undeveloped character of this IRA.

The reduction of approximately 4.5 miles of motorized routes would greatly improve the opportunity for solitude and primitive unconfined recreation within this IRA and its manageability.

Ogden Mountain IRA

Alternative 4 proposes a reduction of approximately 4 miles of motorized routes within the IRA. Approximately 1 mile of road will be placed in storage and about 2 miles of road will be fully decommissioned. Two existing trail segments (Sauerkraut Trail #401 and Ogden Mountain Trail #404) would be managed for non-motorized use. No mountain bike trails are proposed in this IRA.

Wilderness Attributes

Implementing alternative 4 would not change the natural character or special features and values of the Ogden Mountain IRA. The undeveloped character and opportunities for solitude and primitive recreation would improve somewhat due to the storage and decommissioning of existing motorized roads and improve its manageability.

Nevada Mountain IRA

Alternative 4 would reduce motorized routes within this IRA by approximately 1 mile and would keep the number of miles of non-motorized trails about the same as the existing condition. Approximately 8 miles of roads would be decommissioned. Additionally, 5.5 miles of motorized trail and 4.5 miles of non-motorized trail would be relocated and reconstructed.

The Helmville-Gould trail would continue to be managed for motorized use and seasonal use would be allowed from its intersection with the CDNST and Dalton Mountain. An amendment to the Helena National Forest Plan would establish motorized use on the Helmville-Gould trail.

Implementation of this alternative would result in the designation of about 11 miles of new mountain bike trail system in the IRA.

Wilderness Attributes

Implementing alternative 4 would not change the natural character or special features of the Nevada Mountain IRA. The undeveloped character and opportunity for solitude and primitive recreation would improve over the long term based on the decommissioning of 7 miles of existing road. All other areas will likely see no real change to this wilderness attribute as a result of actions from this alternative.

Cumulative Effects

Cumulative effects would be similar to those described for alternative 2 and 3. Alternative 4 would initiate changes to the current travel planning on the Lincoln Ranger District. In addition to these proposed changes, a number of past, present and reasonably foreseeable future projects have been completed or are planned within the planning area that may have effects on the wilderness attributes of the IRAs and the unroaded expanse within the planning area. The cumulative effects analysis indicates that changes to these routes in addition to the past, present and reasonably foreseeable future actions would be beneficial to the wilderness attributes of the IRAs and unroaded expanse because much of the cumulative effects are designed to improve the natural and undeveloped wilderness attributes.

Compliance with Forest Plan and Other Relevant Laws, Regulations, Policies and Plans

The Blackfoot travel planning area consists of Forest Plan management area designations that allow for wheeled motorized routes, with two exceptions. As described in more detail in chapter 2, alternative 4 would include continued management of a non-motorized trail in management area N1 and a motorized trail in management area R1. A programmatic Forest Plan amendment would be necessary for continuing this use. Potential effects from this travel plan proposal would not harm or degrade the identified wilderness characteristics of the IRAs.

For more details on compliance with the Helena Forest Plan, see appendix A; and for more details on compliance with other regulations and policy, see the Roadless Area Report (Payne and Casselli 2013) in the project record.

Other Relevant Mandatory Disclosures

None of the proposed activities under any of the action alternatives would cause irreversible or irretrievable commitments of the roadless and wilderness attributes in the IRAs and the Specimen Creek unroaded expanse.

Summary of Effects

Under alternative 4 the number of miles of routes open to wheeled motorized vehicles within the IRAs and unroaded expanse would decrease by approximately 10 miles. The number of miles of non-motorized trails would increase by about 12 miles. Approximately, 7.2 miles of existing roads would be decommissioned.

Conclusions

Each of the action alternatives would enhance or improve the wilderness attributes of the IRAs and Specimen Creek unroaded expanse in the planning area. This finding is based on the overall reduction in the miles of motorized use through these areas, and the increase and delineation of both the motorized and non-motorized routes. By consciously designating these routes, management of the use within the IRAs and unroaded expanse would be more predictable and more concise and would allow for better management of these generally undeveloped areas. Decommissioning of miles of roads and trails and placing some roads in long-term storage would improve the undeveloped character of these IRAs over time. Additionally, opportunities for solitude and unconfined primitive recreation would increase with the reduction of the number of miles of motorized routes because the noise and dust created by motorized users will have a net decrease.

Proposed activities would have an impact on the quality of the motorized and non-motorized routes within the IRAs and the Specimen Creek unroaded expanse. The following table describes the relative comparison of the alternatives from the measurement indicators identified to address the effects to the unroaded resource.

The programmatic Forest Plan Amendment for Management Areas N1 and R1 and Forest Plan Big Game Security Amendment would not affect wilderness attributes of IRAs.

For more details on compliance with the Forest Plan, see appendix A and for more details on compliance with other regulations and policy, see the Roadless Areas Report (Casselli 2014) in the project record.

Table 56. Comparison of the measurement indicators for the Roadless Resource by alternative

Issue	Measurement Indicator	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Quality Motorized and Non-motorized Road/Route System	Miles of motorized routes within IRAs/unroaded expanse	76	60	32	48
	Miles of non-motorized routes within IRAs/unroaded expanse	59	67	94	81
	Meet intent of wilderness	No change	Improvement to Undeveloped	Improvement to Undeveloped	Improvement to Undeveloped

Issue	Measurement Indicator	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	attributes	from Existing	and Opportunities for Solitude and Primitive Recreation	and Opportunities for Solitude and Primitive Recreation	and Opportunities for Solitude and Primitive Recreation

Terrestrial Wildlife

This section analyzes the potential effects of the proposed alternatives for the Blackfoot Travel Plan on terrestrial wildlife and their habitats including the following:

- Federally listed threatened, endangered, candidate and proposed species
- Forest Service Rocky Mountain Region (R1) sensitive species
- Helena National Forest Management Indicator Species (MIS)
- Other species of concern
- Migratory birds

Roads can alter animal behavior by causing changes in home ranges, movement, reproductive success, escape response, and physiological state, as well as promote the dispersal of exotic species by altering habitats, stressing native species, and providing movement corridors. Roads also promote increased hunting, fishing, passive harassment of animals, and landscape modifications. Not all species and ecosystems are equally affected by roads (Tombola and Frissell 2000). In general, travel management improves and increases habitat for some species by closing or decommissioning roads while reducing habitat for others. Disturbance associated with these activities can also affect an animal's use of a given area. The disturbance may be temporary or long term, depending on the severity of the disturbance and the species affected. Wildlife behavior may take the form of avoidance, habituation, or attraction. These potential effects are addressed in this section.

We discuss the species considered and evaluated for this project and explain how roads, trails and vehicles affect wildlife in general. Unless noted, these effects apply to all species discussed. Then for each species or group of species, we describe habitat. We then state the direct, indirect and cumulative effects common to all species, followed by the anticipated effects from each alternative and cumulative effects for all alternatives, by species. Finally, we summarize species determinations.

This section is based on the detailed analysis presented in the Wildlife Report and Biological Evaluation (Reitz 2014) in the project record.

Regulatory Framework

Current management direction regarding desired future conditions for threatened, endangered and sensitive species, as well as MIS and migratory birds, on the Helena National Forest can be found in the following documents, on file at the District office:

- Forest Service Manual and Handbooks (FSM/H 2670)
- National Forest Management Act 1976 (NFMA)
- Endangered Species Act (ESA) and the Joint Counterpart Endangered Species Act Section 7 Consultation Regulations (50 CFR Part 402)
- National Environmental Policy Act 1969 (NEPA)
- Migratory Bird Treaty Act of 1918 as amended (16U.S.C.668-668d)
- Northern Region (R1) Sensitive Species List (02/2011 update)

- Helena National Forest Land and Resource Management Plan (LRMP): The Helena National Forest Plan provides standards and guidelines that set the framework for management of wildlife species. Forestwide standards provide direction for wildlife management and are identified on pages II/17 – II/21. The standards that apply to the alternatives are analyzed for all alternatives. This plan also identifies Management Areas (MAs), and provides direction for each. MA direction relative to wildlife is summarized below:
  - ♦ M-1 – Management practices to maintain or improve wildlife habitat will be permitted where necessary to meet the objectives of adjacent management areas.
  - ♦ N1 – Contains Research Natural Areas (RNAs); wildlife habitat improvements are not permitted.
  - ♦ L-1 – Specific wildlife and fisheries needs will be identified and considered when developing allotment management plans, provided the needs are compatible with area goals. Habitat improvement projects will be scheduled when they would help achieve area goals.
  - ♦ L2 – Wildlife habitat improvement practices, including road management, prescribed fire, and other techniques, may be used to maintain and/or enhance the quality of big game winter range. Projects will be coordinated for livestock and big game needs. Maintain adequate thermal and hiding cover adjacent to forage areas. Generally this means providing at least 25 percent thermal cover, where available, on identified winter range.
  - ♦ R1 – Habitat improvement projects, such as prescribed fire and water developments, may be used to maintain or improve the fish and wildlife habitat, if the projects are compatible with the area's goals.
  - ♦ P1 – Within Scapegoat Wilderness, not within planning area, but used as wildlife analysis area for various species
  - ♦ A1 – Includes Lincoln Ranger District office area; habitat improvement activities will emphasize non-game species
  - ♦ T-1 – Wildlife and fisheries habitat improvement projects may be implemented, provided they are compatible with the management area goals.
  - ♦ T-2 – Provide for the maintenance and enhancement of big game winter range. Management activities on big game winter range are to be consistent with big game winter range values. Maintain adequate thermal and hiding cover adjacent to forage areas. Generally this means providing at least 25 percent thermal cover on identified winter range.
  - ♦ T-3 - Maintain a minimum of 35 percent hiding cover for big game. Maintain thermal cover adjacent to forage areas. Wildlife habitat improvement practices, including road management, prescribed fire, and timber harvest, may be used to maintain and/or enhance the quality of big game summer habitat. Openings created by timber harvest will be reforested to the extent necessary to meeting hiding cover requirements of big game before harvesting adjacent areas.
  - ♦ T4 – Where elk, habitat exists, project design will incorporate management practices to maintain or enhance summer and winter habitat, to the extent that the VQOs for the area are met. Wildlife and fisheries habitat improvement projects may be implemented, provided they are compatible with the management area goals.

- T-5 - Wildlife and fisheries habitat improvement projects may be implemented, provided they are compatible with the management area goals. Maintain adequate thermal and hiding cover adjacent to forage areas, provided timber harvest volumes are not significantly reduced over the rotation period.
- W-1 - Wildlife habitat improvement practices, including road management, prescribed fire, and other techniques, will be used to maintain and/or enhance the quality of big game and nongame habitat. Maintain adequate thermal and hiding cover adjacent to forage areas. Generally this means providing at least 25 percent cover, where available, on identified winter range.
- W-2 - Most new roads and about 50 percent of existing roads will be closed, at least seasonally. Wildlife habitat improvement practices, including road management, prescribed fire, and other techniques, will be used to maintain and/or enhance the quality of big game calving and summer habitat. Maintain adequate thermal and hiding cover adjacent to forage areas.

Table 57 that follows lists the species considered for this project. The list is comprised of federally listed threatened, endangered, candidate, and proposed species; Forest Service Regional Forester's (R1) Sensitive species, Management Indicator Species (MIS) listed in the Forest Plan (1986) and migratory bird species, which may occur within the project area. The list was derived from:

- The USFWS Threatened, Endangered, and Proposed Species list (December 10, 2009 File Number 84320-2010-SL-0068)
- USDA Forest Service Regional Forester's (R1) Sensitive Species (02/2011)
- Migratory Bird Treaty Act (MBTA) of 1918 and Executive Order 13186
- Management indicator species (MIS) list from the Helena National Forest Plan (1986)

This section analyzes the potential effects of the proposed federal action on all threatened, endangered, and proposed species and critical habitat known or suspected to occur in the proposed action area. The species list has been confirmed by accessing the U.S. Fish and Wildlife Service (USFWS) Montana Ecological Services Field Office website at: http://www.fws.gov/montanafieldoffice/Endangered_Species/Listed_Species/Forests/Helena_sp_list.pdf

Criteria used to exclude species from further analysis included the following: (1) no habitat exists for the species, (2) it is unlikely (based on known habitat requirements) that the species existed in the area, and (3) potentially suitable habitat for the species within the project area would not be affected by the project.

No further analyses will be done for excluded species: bald eagle (*Haliaeetus leucocephalus*); peregrine falcon (*Falco peregrinus anatum*); Harlequin duck (*Histrionicus histrionicus*); northern bog lemming (*Synaptomys borealis*); Townsend's big-eared bat (*Plecotus townsendi*); northern leopard frog (*Rana pipiens*); plains spadefoot (*Spea bombifrons*); and bighorn sheep (*Orvis canadensis*).

Table 57. Species known or suspected to occur within the influence area of proposed actions

Species	Status	Occurrence and Effect on habitat	Species Excluded
Grizzly Bear *(Ursus arctos horribilis)*	T	Potential for transient or resident bears throughout the planning area. North half of planning area within NCDE Recovery Zone, south half within mapped grizzly bear distribution zone.	
Canada Lynx *(Lynx canadensis)*	T w/ Critical habitat	Potential for transient or resident lynx throughout the planning area. Planning area within “occupied” lynx habitat and designated “critical” habitat.	
Gray wolf *(Canis lupus)*	S	Known packs are present within the planning area. Wolves are habitat generalist dependent upon abundant prey (deer/elk) and minimal human disturbance. The proposed decrease in acres open to motorized use and the shortened season of use would reduce potential disturbance to wolves and minimize the overlap with denning period. The proposed actions would not reduce the availability of prey. Control measures, including hunting, pose the greatest threat to wolves.	
Fisher *(Martes pennant)*	S	Prefer moist mixed coniferous forested types (including mature and old-growth spruce/fir at low- to- mid elevations), riparian/forest ecotones, and secure denning habitat. Rare occurrences on the Helena NF. Habitat suitability low, likelihood of occurrence low. Three documented occurrences within past 10 years along western edge of planning area. Action alternatives would minimize the potential for disturbance or displacement and overlap with reproductive period. Primary threat to individuals is trapping.	
Wolverine *(Gulo gulo)*	P	Confirmed wolverine occurrences and suspected denning in planning area. The greatest concentration of modeled denning habitat occurs within the Scapegoat Wilderness and along its southern boundary. the action alternatives would result in a decrease of open road density across the planning area; also both action alternatives would result in a decrease of motorized roads and trails within wolverine habitat; and Roadless areas, RNAs and wilderness occur within the planning area and provide for suitable displacement and security habitat.	
Bald eagle *(Haliaeetus leucocephalus)*	S	See paragraph under *Species Considered and Evaluated*	X
Peregrine falcon *(Falco peregrinus anatum)*	S	See paragraph under *Species Considered and Evaluated*	X
Harlequin duck *(Histrionicus histrionicus)*	S	See paragraph under *Species Considered and Evaluated*	X

Species	Status	Occurrence and Effect on habitat	Species Excluded
Flammulated owl *(Otus flammeolus)*	S	Insectivorous seasonal migrant. Some minor disturbance and /or short term displacement may occur. Some minor effects to snag habitat associated with open roads and firewood retrieval. No effect upon population viability.	
Black-backed woodpecker *(Picoides arcticus)*	S	Some winter residents may occur in recent burn areas or areas of high beetle caused mortality. None of the alternatives would result in a loss of habitat and the potential for disturbance related effects are insignificant.	
Northern bog lemming *(Synaptomys borealis)*	S	See paragraph under *Species Considered and Evaluated*	X
Townsend's big-eared bat *(Plecotus townsendi)*	S	See paragraph under *Species Considered and Evaluated*	X
Western toad *(Bufo boreas)*	S	Identified at a number of breeding sites across the Blackfoot landscape. Active during motorized recreational period. Hibernate in mud or burrows and would be impacted by motorized recreation.	
Northern leopard frog *(Rana pipiens)*	S	See paragraph under *Species Considered and Evaluated*	X
Plains spadefoot *(Spea bombifrons)*	S	See paragraph under *Species Considered and Evaluated*	X
Bighorn sheep *(Orvis canadensis)*	S & MIS	See paragraph under Species Considered and Evaluated	X
Elk *(Cervus elaphus)*	MIS	Present throughout the project area during non-winter recreation period. Some temporary displacement and minor loss of habitat loss due to construction of motorized routes, non-motorized trails, and trailheads. No loss of population viability.	
Mule deer *(Odocoileus hemionus)*	MIS	Present throughout the project area during non-winter recreation period. Some temporary displacement and minor loss of habitat loss due to construction of motorized routes, non-motorized trails, and trailheads. No loss of population viability.	
Marten *(Martes americana)*	MIS	Patchy distribution within planning area. No effect upon mature conifer habitat or population viability.	

Species	Status	Occurrence and Effect on habitat	Species Excluded
Northern goshawk *(Accipiter gentilis)*	MIS	Seasonal migrant, present during non-winter recreation period. No effect upon old growth habitat, nesting or foraging habitat or population viability.	
Pileated woodpecker *(Dryocpus pileatus)*	MIS	Present during non-winter recreation period. No effect upon old growth habitat or population viability. Some minor effects to snag habitat associated with open roads and firewood retrieval. No effect upon population viability. Disturbance to individuals from motorized use of trails would be insignificant.	
Hairy woodpecker *(Picoides villosus)*	MIS	Present during non-winter recreation period. Some minor effects to snag habitat associated with open roads and firewood retrieval. No effect upon population viability. Disturbance to individuals from motorized use of trails would be insignificant.	
Mountain goat (*Oreamnos americanus)*	SOC	A species of concern. Numbers throughout the state seem to be declining for reasons not fully known. Reintroduced population. Primary areas of use include Red Mtn. and Stonewall Mtn. and ridgeline along Wilderness boundary.	

T=Threatened; S=Sensitive; P= Proposed; MIS= Management Indicator Species; and SOC=Species of Concern

How Routes and Vehicles Affect Wildlife

The following is a description of the overall ecological footprint of roads on general forested habitat. The concepts of fragmentation, edge, and habitat loss apply to both the general forested environment as well as old growth.

Roads can affect the way many animals use an area. In general, roads may cause concentrations of humans and human disturbance into habitats. The disturbance may be temporary or long term depending on the severity of the disturbance and the species affected. Human activities can impact wildlife and their habitat through four primary means: exploitation, disturbance, habitat modification, and pollution. Wildlife behavior may take the form of avoidance, habituation, or attraction (Knight and Cole 1995). Roads are known to cause displacement of some animals; others become habituated to traffic but then may experience higher rates of human-caused mortality.

Motorized activities such as OHV travel and snowmobiling have short duration, high intensity, and large geographic scope (50 miles or more per day). Non-motorized activities such as cross country skiing, hiking, horseback riding, and mountain biking generally have longer duration, low intensity, and small geographic scope (10-20 miles per day). Using motorized means to reach a non-motorized recreation area combines aspects of each of the two previous means of recreation, but is highly localized in geographic scope, moderate to high intensity, and long in duration. All of these things would have different effects upon different parts of the biological world.

Motorized and non-motorized human presence raises heart rates and causes wildlife species to abandon nests/dens, change movement patterns, and alter foraging behaviors (Knight and Cole 1995). Some species are more tolerant of humans than others, but negative effects are generally true for the majority.

Many responses of animals, especially small animals, to off-route use may be short lived. However, long-term and cumulative effects are not readily understood and may include abandonment and behavioral alterations (Knight and Cole 1991). Montana has a statewide OHV plan within which the Helena National Forest currently operates (See alternative 1).

Motorized use within 300-foot buffers (600 feet total) directly impacts wildlife through mortality especially for small mammals, amphibians, and reptiles (Fahrig et al. 1995). This use indirectly affects wildlife by decreasing habitat effectiveness through disturbance, displacement, and habitat loss (Busak and Bury 1974 as cited in USDA and USDI 2001). Disturbance and displacement are more pronounced in open habitats versus forested habitats (e.g. sagebrush, grasslands) since more of the area is accessible to off-route use. Habitat loss in the form of fragmentation and creation of edge may be more pronounced in forested habitats. Habitat is also lost through the spread of noxious weeds which is facilitated by off-route use (USDA and USDI 2001) and through firewood cutting that removes down logs and snags (Bate and Wisdom 2002a, Bate and Wisdom 2002b, McShane et al. 2003).

Habitat Loss

The presence of roads and trails on the landscape represents a direct loss of habitat. In some cases, this could represent a permanent loss if the road surface prevents vegetation from becoming re-established. Also, as long as the road is in use and is not revegetated the habitat is lost to use by wildlife species. Some animals are more vulnerable to habitat loss; generally large, long-lived species with large area requirements, low densities and reproductive rates tend to be more vulnerable (Forman et al. 2003). Interior forest species are also particularly vulnerable to habitat loss and subsequent declining patch sizes due to increases in edge habitat.

Fragmentation

Fragmentation has two components: reduction of total available habitat and apportionment of remaining habitat into smaller, more isolated patches (Meffe and Carroll 1994). It is a change in the landscape structure that includes smaller patch sizes, less interior habitat, and greater distances between patches which in turn can lead to subpopulation isolation (Reed et al. 1996, Tinker et al. 1998, Temple and Wilcox 2000). Fragmentation can affect animal populations by decreasing species diversity and densities due to creation of smaller patches of habitat.

Roads present demographic barriers that cause habitat (and population) fragmentation. The extent of impacts depends on the species, its size, home range, and dispersal habits, as well as the juxtaposition of habitat. Roads generally have less of a fragmentation effect on species with large home ranges and great mobility depending on the spatial arrangement of habitat. Species with small home ranges and limited mobility generally are more susceptible to the barriers and subsequent fragmentation created by roads (Meffe and Carroll 1994). While metapopulation theory suggests that barrier effects from roads are mitigated by the mobility of a species, it doesn’t take into account the condition of the surrounding landscape relative to providing habitat for a particular species (Forman 1995). Overall, long term effects of roads on population dynamics and genetic structure are unknown; as such, at this point, isolation effects are generally inferred.

Edge Effects

Roads fragment habitat by dissecting larger patches into smaller ones; as a result edge habitat is created. For species that can’t live in forested edge, the habitat loss due to roads is more extensive than the actual removal (Meffe and Carroll 1994); the virtual footprint is large (Forman et al. 2003). Road edges increase soil erosion and decrease soil moisture, increase disturbance by human activity, noise, exotic species introductions, evapotranspiration, temperature, and incident solar radiation (Trombulak and Frissell 2000, Forman et al. 2003). Some wildlife may benefit from the additional habitat created by road corridors (Forman et al. 2003). For example, raptors may use roadsides more than adjacent habitat because of greater availability of perch sites.

The effects of edge on the adjacent forest depend on how much of the original canopy and understory remains. Edge zones tend to be drier and less shady than interior forests and tend to favor shade-intolerant plants. For example, increases in incident light in the adjacent forest would favor those species the preferentially grow where light levels are high such as early successional, disturbance related species (Trombulak and Frissell 2000). Edge-associated species benefit by creation of edge habitat but interior habitat species are generally impacted (Reed et al 1996). Road edge habitat is different from natural edges or those created by clearcuts; those edges would become less distinct overtime while road edges tend to exist long term (Reed et al. 1996).

Some wildlife species prefer roads (Knight and Kawashima 1993, Knight et al 1995) and are not hindered by their presence. For example, ravens are more abundant along roadsides than away from roadsides. This is attributed to greater food availability associated with road killed animals. Some bird species do not perceive roads as any more of a barrier than natural barriers (St. Clair 2003). Lynx cross roads at frequencies that do not differ from random expectations (Ruggerio et al. 2000). Some species are attracted to roadside vegetation which in turn attracts other species not commonly found along roadsides. For example, big game species – elk and deer – may be drawn to the forage opportunities afforded by roadside vegetation. Wolves subsequently are drawn to these areas for the prey (Thiel 1985, Mech et al. 1988).

Roads can present barriers, bottlenecks, and otherwise impede movement especially for smaller animals or animals with limited mobility (Mader 1984, Swihart and Slade 1984). The extent to which a road acts as a barrier depends on an animal's behavior, dispersal ability, and population density. The presence of roads can affect animal movement, behaviorally. Some animals avoid crossing roads and may extend their movements to compensate (Trombulak and Frissell 2000). For some species, the mere presence of a road acts as a barrier; for others, the width of the road and associated clearing may represent the barrier (Oxley, et al. 1974).

Connectivity is important because it allows animals to move between different habitats to meet their daily and lifetime needs (Forman et al. 2003). It also allows for repopulation of unoccupied areas. Reduced movement results in empty habitats or habitats that have smaller populations than they can actually support. This increases the risk of local extinction in that area and subsequently results in a lower regional population and lower long-term population persistence. This also could increase isolation and result in decreased gene flow (Forman et al. 2003).

Snags and down logs

Direct effects to snag and down log habitat occur when habitat is converted to non-habitat through road construction (Hann et al. 1997, Reed et al. 1996, Trombulak and Frissell 2000). New road and motorized trail construction directly reduce habitat based on the amount of vegetation removal necessary to meet standards for construction.

Bate and Wisdom (2002a) found only a third as many snags near roads when comparing snags in roaded and unroaded landscapes. Snag attrition was highest within 150 feet of roads and generally became insignificant beyond 600 feet, if there were no other roads in the vicinity. Effects were greater in ponderosa pine communities than in other mixed coniferous forests (Bate and Wisdom 2002b).

Loss of snags means loss of nesting, roosting, foraging and hiding and thermal cover. It is difficult to determine the extent of impacts to the various wildlife species that depend on snags. The extent of the effects on snag associated species would vary depending on the availability of habitat in the surrounding area, the degree of mobility (and type of mobility – e.g. flying versus walking where ambulatory animals may be more susceptible to direct mortality while traversing to available habitat) (Forman 1995). Animals may respond to reduced habitat quality either numerically (decreases in abundance or density) or behaviorally (road avoidance) (Forman et al. 2003).

Effects on down logs are the result of snag attrition and removal for firewood. Bate and Wisdom (2002b) found that log densities along open roads were significantly lower than densities along closed roads. Coefficients have not been developed to determine percentages of down logs remaining post firewood gathering.

Loss of down logs includes loss of foraging sites, hiding and thermal cover, denning, nesting, travel corridors and vantage points for predator avoidance (Rose et al. 2001). As with the snag discussion above, loss of these structures and resultant effects on habitat quality depend on the species and its ecology. The effects described above are linear in nature and the extent to which various species are affected would also in part depend on home range configuration. Also, if firewood gatherers select sound, large logs for firewood, logs in advanced decay classes should remain on the landscape. However, removal of sound logs affects long term recruitment of any decay class.

Formal studies that quantify the indirect impacts of roads on snags and down logs have been lacking until two recent studies conducted in Montana and Oregon that quantify the effects of roads on these structures (Bate and Wisdom 2002a, 2002b). The results from these studies are the basis from which this analysis is conducted and is described in more detail in “Analysis methodology for effects of rods on snags and down logs” in the project file.

Methodology and Assumptions

Appendix E summarizes the assumptions and methodologies used in the analysis of different alternatives for each wildlife parameter. The scale of analysis varies between species and is explained in appendix E under each species. More detailed information as to the construction and application of habitat models for threatened, endangered, and sensitive species and for management indicator species (including elk) is included in the project file.

Affected Environment

The Blackfoot travel planning analysis area for various wildlife species includes the entire Lincoln Ranger District, including that portion of the Scapegoat Wilderness occurring on the Helena National Forest and encompasses a wide range of wildlife habitats and wildlife species associations. Even though the Scapegoat Wilderness is not in the planning area and no activities are proposed there, it was used as part of the analysis for some species. Not all of these habitats and species groups are affected by Forest travel management in ways that are measurable or meaningful (in terms of individual species behavior, survivorship, or productivity). As a result, not all of the wildlife parameters (species, habitats, habitat components) tallied in table 57 are analyzed and discussed in the body of the report that follows—though they may receive some mention.

Parameters not carried forward in the report are those for which there are no anticipated impacts associated with alternatives or for which the impacts are addressed via analysis of a surrogate species. The information presented in this analysis comes from survey and observation in the field, accumulated professional experience, discussion with other professionals and field-going personnel, examination of current scientific literature, GIS modeling analyses, and conservation strategies and recovery plans.

Research Natural Areas (RNA): There are two designated RNAs in the project area. Both RNAs adjoin the southern boundary of the Scapegoat Wilderness. The Indian Meadows RNA encompasses 949 acres of which 106 acres occur within the Scapegoat Wilderness. The Red Mountain RNA encompasses 1,870 acres. Designated RNAs are administratively close to all motorized use under all alternatives. Designated RNA lands are included as non-motorized acres throughout this document for analysis purposes.

The ‘Proposed’ Granite Butte RNA is in the southern portion of the Lincoln District, south of Stemple Pass. Because Granite Butte has only been ‘proposed’ and is not actually a designated RNA, it is not administratively closed. The ‘proposed’ RNA is open to motorized use under the existing condition and proposed action alternatives. These lands are included as motorized acres throughout the document for analysis purposes.

Threatened and Endangered Species

Threatened, endangered, candidate, and proposed species are managed under the authority of the Federal Endangered Species Act (PL 93-205, as amended) and the National Forest Management Act (PL 94-588). Under provisions of the Endangered Species Act (ESA), Federal agencies shall use their authorities to carry out programs for the conservation of listed species, and shall insure any action authorized, funded, or implemented by the agency is not likely to: (1) adversely affect listed species or designated critical habitat; (2) jeopardize the continued existence of proposed species; or (3) adversely modify proposed critical habitat (16 USC 1536).

The federally listed species shown in table 57 were confirmed by accessing the U.S. Fish and Wildlife Service (FWS) Montana Ecological Services Field Office website (11/29/2012). In accordance with the Endangered Species Act (ESA), its implementation regulations (50 CFR 402.12) and FSM 2671.4, the Helena National Forest is required to request formal consultation with the USFWS with respect to the determination of potential effects on grizzly bears. In accordance with the ESA, its implementation regulations (50 CFR 402.13) and FSM 2671.4, the Helena National Forest is required to request written concurrence from the FWS with respect to determinations of potential effects on Canada lynx, and critical habitat for lynx. This biological assessment (BA) would consider best current data and scientific information available. A revised BA must be prepared if: (1) new information reveals effects, which may impact threatened, endangered, and proposed species or their habitats in a manner or to an extent not considered in this assessment; (2) the preferred alternative is subsequently modified in a manner that causes an effect, which was not considered in this assessment; or (3) a new species is listed or habitat identified, which may be affected by the action. Potential effects on threatened and endangered species have been assessed in light of current conservation strategies and guidelines including the Northern Rockies Lynx Management Direction (NRLMD 2007), Grizzly Bear Recovery Plan (1982, 1993) and, Interagency Grizzly Bear Guidelines (1986). To date, consultation has not been initiated.

Grizzly Bear (*Ursus arctos*)

Forest Plan Direction and Access Management

The Helena Forest Plan (1986) provides direction and guidelines for the management and conservation of grizzly bear habitat. This direction is described in the Forestwide Goals (FP-II/1), Forestwide Objectives (FP II/4), Forestwide Standards (FP II/17, 19), Individual Management Area direction (FP III/56, 59, 60), Forest Plan Monitoring Requirements (FP IV/8) Forest Plan Appendix A (resolution of Issues and Concerns), Appendix D (Guidelines for Management of Grizzly Bear Habitat), and Appendix E (direction for grizzly bear management outside the recovery zone).

For HNF lands within the recovery zone, access management is addressed in accordance with the North Continental Divide Ecosystem Grizzly Bear Access Management Protocol and the Flathead NF Amendment 19 (the accepted Motorized Access Density Analysis & Security Core Area Analysis for Grizzly Bear within the NCDE). The moving windows analysis is used to measures the density of roads and the amount of secure habitat within the respective subunits of a Bear Management Unit (BMU) using three criteria: (1) Total Motorized Road Density (TMRD), (2) Open Motorized Road Density (OMRD), and (3) Security Core habitat. BMU subunits are evaluated against these three criteria to determine if they meet the guidelines or are in a degraded condition not meeting the guidelines.

Relevant Forest Plan direction for T&E species specific (II/19) to grizzly bear management on the HNF include:

- In occupied grizzly habitat, to minimize man-caused mortality the open road density would not exceed the 1980 density of 0.55 miles per square mile, which was determined to have little effect on habitat capability.
- Apply the guidelines in appendix D to the Management Situation 1 and 2 (referred to essential and occupied prior to 1984) grizzly bear habitat on the Forest.
- Initiate field studies to in undesignated areas known to be used by grizzlies, to determine if areas should be designated as grizzly habitat. Until sufficient evidence is available to determine the status of these areas, manage them according to Appendix E, Grizzly bear Guidelines Outside the Recovery Areas.

Appendix D of the Helena FP (1986) identifies NFS lands within the recovery zone as either Management Situation (MS) 1 or MS 2 lands in accordance with the Interagency Grizzly Bear Management Guidelines (IGBC 1986). No Management Situation designations were made for HNF lands outside the recovery zone. Only MS 1 and MS 2 lands are identified in Appendix D of the Helena FP. Management Situation 1 lands include the Scapegoat Wilderness, Alice Creek non-motorized area, and the upper reaches of the drainages encompassing headwaters of the Copper creek drainage. The remaining lands within the recovery zone are classified as MS 2 lands. The following is a description of MS 1 and 2 lands:

Management Situation 1 – This area contains grizzly population centers and habitat components needed for survival and recovery of the species. Grizzly habitat maintenance and improvement, and grizzly and human conflict minimization would receive the highest priority and management decisions would favor the needs of the grizzly bear over other land uses (USDA Forest Service 1986). The probability is very great that major federal activities or programs may affect the grizzly.

Management Situation 2 – The area lacks distinct grizzly population centers. Highly suitable habitat does not generally occur, although some grizzly habitat components exist and grizzlies may be present occasionally. Habitat maintenance and improvement, and grizzly and human conflict minimization may be, in some cases, important but not the most important management considerations. The effects of major federal activities or programs on the conservation and recovery of the species are not generally predictable.

In addition to the above management situations descriptions, Appendix D identifies the following coordination dates for grizzly habitat use:

- ♦ Spring habitat (concentrated use areas) – April 1 to June 30
- ♦ Breeding areas - May 1 to July 15.
- ♦ Alpine feeding areas - July 1 to September 15.
- ♦ Subalpine fir/whitebark pine habitats - August 1 to November 30.
- ♦ Denning habitat - October 15 to March 31.

More recently, the NCDE Access Technical Group (unpublished report 2002) suggested that “grizzly bear access management apply during the non-denning period, and include April 1 through November 30 of each year.” In addition, the dates of March 31 for ending of denning and April 1 for the start of the spring season were discussed and agreed upon (for consistency among Montana national forests) by an interagency team of U.S. Forest Service and U.S. Fish and Wildlife Service biologists (the "Montana Level 1 Biologist Team, unpublished notes, 12/9/2003). The chronology of these dates is consistent with the best available scientific information such as the work of Mace and Waller (1997) and other grizzly bear denning studies.

Appendix E of the Helena Forest Plan provides direction for grizzly bear management outside the recovery zone (Grizzly Bear Management Outside of Recovery Areas). Appendix E provides guidance for identifying grizzly bear habitat that is not currently inventoried and determining levels of bear activity to base management on those findings (USDA 1986, pages E/1-E/2). Management guidance applies to areas of known grizzly bear activity. Currently, there are no known grizzly bear biological activity centers (BAC)[2] in the distribution zone as defined in Appendix E of the Helena Forest Plan.

Collectively, the Forest Plan guidelines, *North Continental Divide Ecosystem Grizzly Bear Access Management Protocol* (19/19/68 guidelines), coordination dates, seasonal use considerations and human activity guidelines are used to maintain grizzly bear habitat and reduce impacts to bears.

In addition, the Forest Plan identifies Forestwide standards that directly or indirectly benefit grizzly bears and help to minimize effects of roads on grizzly bears across the Helena National Forest. Standards that are directed at maintaining or improving seasonal habitat or security areas for big game species (for example, elk) would indirectly benefit grizzly bears and black bears by improving security and potentially improving the forage base.

Supporting Science for Secure Core Methodologies and Road Calculations (Moving Windows)

Methodologies for calculating secure habitats for grizzly bear is referred to as "moving windows" process which utilizes direction from the Interagency Grizzly Bear Committee (IGBC). Within the NCDE Recovery Zone of the planning area, the management and classification of roads utilizes road definitions of the IGBC Taskforce Report – Grizzly Bear / Motorized Access Management (1994; Rev. 1998). In this report, a road is considered all routes (created or evolved) "that are greater than 500 feet long which are reasonably and prudently drivable with a conventional car or pickup." An "open" road is one without restriction on motorized use. "Restricted" roads are those in which motorized use is restricted yearlong or seasonally with an "effective" physical device, usually a gate. Administrative and permitted use typically occurs on roads defined as restricted. The term "closed" has often been used as a synonym for the term "restricted" for FS applications but use of the term is discouraged by the IGBC which directs that a "closed" route or area is closed to all types of traffic including non-motorized or foot-traffic. A "reclaimed or obliterated" road is a route where there are no plans for its long-term use and it is physically treated in a way that it can no longer function as a road. These treatments often include re-contouring to the original slope, planting the surface with trees/shrubs, and placement of forest debris such as logs and brush. "Stored" is an abbreviated FS term for "intermittent stored service," for a road where there is intent for use sometime in the future. If the planned use extends into the future greater than 10 years, and treatments (barrier placement, first 500 meters obliterated, debris added to surface and done so under a decision document) of this road result in preventing all motorized access (including single-track vehicles)

[2] Biological Activity Center (BAC) is defined in Appendix E of the Forest Plan as "verified grizzly bear observations over the last 10 years (6 year out of 10). Observations must include females with cubs or yearlings at least 5 of the10 years.

then the road would qualify as "reclaimed or obliterated" and be treated as such during secure core calculations for grizzly bear. Otherwise, any treatments less than those previously described, would result in a "stored" road considered as "restricted" as per IGBC definitions.

Given these IGBC definitions, all routes are qualified and contribute to either the open motorized route density (OMRD) or total motorized route density (TMRD) when utilized to calculate secure Core habitat for grizzly bears. To clarify, all "open" and seasonally "restricted" roads contribute to OMRD measurements, while all "open", seasonally "restricted" and yearlong "restricted" contribute to TMRD measurements. Obliterated roads and qualified "stored" roads do not contribute to either OMRD or TMRD. Together, roads contributing to OMRD and TMRD are buffered for their influence on grizzly bears by 0.31 miles with the respective acres being considered unavailable to bears. Once these unavailable acres are removed from the total acres in a bear management unit, the remaining acres are considered as secure Core habitat for grizzly bears. The modeling (calculating) process is referred to as "moving windows." Individual roads and their status vary by the habitat parameter being measured or calculated (i.e. OMRD, TMRD or Core). Supporting road information was documented accordingly, organized by alternative and species, and included as part of the project record at section C13 (Wildlife).

Species Status and Biology

The grizzly bear was listed as threatened throughout its range in the lower 48 states on July 28, 1975. The Grizzly Bear Recovery Plan was approved in 1982, updated in 1990 and 1992, and revised in 1993 (USDI Fish and Wildlife Service 1993). There are currently five occupied grizzly bear ecosystems addressed in the Recovery Plan. The southern end of the Northern Continental Divide Ecosystem (NCDE) encompasses Helena National Forests north of Highway 200. The overall goal of the Grizzly Bear Recovery Plan is to remove the grizzly bear from threatened status in each of the occupied or reintroduced ecosystems in the 48 conterminous States. A Conservation Strategy for grizzly bears in the NCDE is currently being developed in anticipation of future delisting efforts.

Project area lands north of Highway 200 are within the Monture-Landers Fork Bear Management Unit (BMU) of the NCDE recovery zone. The BMU includes three subunits on the HNF including: Arrastra Creek, Red Mountain, and Alice Creek subunits. Project area lands south of Highway 200 are outside the NCDE recovery zone but within the mapped Grizzly Bear Distribution Zone (USDA Forest Service et al. 2002). Grizzly bear management direction that applies within the recovery zone does not apply to the grizzly distribution zone. The Grizzly Bear Recovery plan (USDI Fish and Wildlife Service 1993 p. 18) notes that "bears can and are expected to exist outside recovery zone lines in many areas. However, only the area within the recovery zone would be managed primarily for grizzly habitat." While grizzly bears both inside and outside the recovery zone are listed as threatened and would receive full protection under the Endangered Species Act (ESA), only lands inside the recovery zone are considered essential to, and therefore managed for, recovery and survival of the grizzly bear population.

For the purposes of the effects discussion for grizzly bears "recovery zone" would refer to those lands north of Highway 200 and "distribution zone" would be used in reference to project area lands outside the recovery zone or south of Highway 200. These references apply only to those lands within the planning area.

Grizzly bears have the potential to occur throughout the planning area. In recent years, grizzly bears have continued to expand their range with numerous occurrences documented south of Highway 200, within and beyond the planning area.

Grizzly bears are considered habitat generalists, using a broad spectrum of habitats. They are opportunistic feeders and will prey or scavenge on almost any available food; grizzly bear movements are determined largely by their search for food. For example, upon emergence from the den in the early spring, grizzlies move to lower elevations and drainage bottoms in search of plants that are greening up. Throughout the late spring and early summer they move towards higher elevations, often following the snow line as food becomes available. Spring habitat tends to be at lower elevations. Therefore, increased potential exists for conflict between bears and humans in these areas. In addition to their importance for foraging, riparian zones are also used extensively as travel corridors by grizzlies (Moss and LeFrance 1987 in USDA Forest Service 2005).

Coniferous forest cover is very important to grizzly bears. Ninety percent of aerial radio relocations of 46 radio-collared grizzlies were in forest cover too dense to observe the bear. Dense forests are also important for thermal cover, hiding cover, and day beds; most beds are located within six feet of a tree.

The importance of open grassy parks with coniferous forest cover has also been documented (USDI Fish and Wildlife Service 1993).

Grizzly bear habitat is best described in terms of the availability of large tracts of relatively undisturbed land that provides some level of security from humans (USDI Fish and Wildlife Service 1993). Effective habitat is often described in terms of core habitat or areas free of motorized access during the non-denning period. Open and total road densities are also important measurements in determining core areas and understanding the extent of habitat security for bears (USDI Fish and Wildlife Service 1993).

The Grizzly Bear Recovery Plan (USDI Fish and Wildlife Service 1993) indicates the most important element in grizzly bear recovery is securing adequate effective habitat. This is a reflection of an area's ability to support grizzly bears based on the quality of the habitat and the type/amount of human disturbance in the area. Controlling and directing motorized access is one of the most important tools in achieving habitat effectiveness and managing grizzly bear recovery (USDI Fish and Wildlife Service 1993).

Canada Lynx (*Lynx canadensis*)

The U.S. Fish and Wildlife Service (FWS) listed Canada lynx as a threatened species under the Endangered Species Act (ESA) in March 2000. Following the listing, the Forest Service (FS) signed a Lynx Conservation Agreement with the FWS in 2001 to consider the Lynx Conservation Assessment and Strategy (LCAS) during project analysis, and the FS agreed to not proceed with projects that would be “likely to adversely affect” lynx until the plans were amended. The Conservation Agreement (CA) was renewed in 2005 and added the concept of occupied mapped lynx habitat. The FWS issued a Recovery Outline for Canada lynx (USDI FWS 2005) in September 2005 to serve as an interim strategy to guide and encourage recovery efforts until a recovery plan is completed. In 2006, the CA was amended to define occupied habitat and to list those National Forests that were occupied; it was also extended for 5 years (until 2011), or until all relevant forest plans were revised to provide guidance necessary to conserve lynx (USDA FS and USDI FWS 2000, 2005, 2006a, 2006b). In March 2007, Forest Plans were amended with the Northern Rockies Lynx Management Direction (NRLMD) Record of Decision. In February 2009, the FWS designated revised critical habitat in Montana, Wyoming, Idaho and Washington and other states.

The Northern Rockies Lynx Management Direction (NRLMD) applies to mapped lynx habitat on all National Forest System lands that are known to be "occupied" by Canada lynx, as defined by the Amended Lynx Conservation Agreement between the Forest Service and the FWS (USFS and USFWS 2006). With the exception of two disjunct mountain ranges, the Elkhorn Mountains and Big Belt Mountains that are defined as "unoccupied", the remainder of Helena National Forest System Lands are defined as "occupied" (USFS and USFWS 2006). The conservation agreement defines "occupied" as (1) there are at least two verified lynx observations or records since 1999 on national forest unless they are verified to be transient individuals; or (2) there is evidence of reproduction on the national forest.

The NRLMD modified direction in existing plans and includes the overriding goal, objectives, standards, and guidelines related to all activities (ALL), vegetation management (VEG), grazing management (GRAZ), human uses (HU), and linkage (LINK). The goal, to conserve the Canada lynx, is a general description of the desired results. Objectives are descriptions of desired resource conditions; standards are management requirements designed to meet the objectives; and guidelines are management actions normally taken to meet the objectives.

Lynx analysis units (LAUs) were identified and mapped on National Forest lands within the project area in accordance with previous direction contained in the LCAS. The size of an LAU represents the approximate size of area used by an individual lynx, not an actual home range, and encompasses all seasonal habitats. LAUs are intended to provide the fundamental or smallest scale with which to begin evaluation and monitoring of the effects of management actions on lynx habitat (Ruediger et al. 2000). For large scale actions such as travel management, the LAU may not provide a large enough analysis area within which to address direct, indirect, and cumulative effects therefore, project impacts must be assessed within the context of multiple LAUs (Ruediger et al. 2000). For the purposes of this analysis potential effects will be addressed for the entire Blackfoot travel planning area. The project area includes fifteen LAUs.

Lynx Biology

Typically, lynx breed through March and April with females giving birth from late April through early June. In Montana, female lynx stayed in natal dens on average 21 ± 17 days, and subsequently used an average of 3 ± 2 maternal dens in a given year (Olson et al. 2011). While their kittens were newborn to 2 months old, 9 female lynx exhibited roughly equal levels of activity from dawn to dusk, with more activity during the day than pre- or post-denning, and travelled shorter daily distances than before kittens were born (Olson et al. 2011).

In Montana, activity patterns of lynx varied by sex, season, and reproductive status, and were not consistently synchronous with the activity patterns of their primary prey snowshoe hares (Kolbe and Squires 2007) which forage primarily at dusk and dawn, remaining largely inactive during daylight hours (Foresman and Pearson 1999, Abele 2004). Female lynx rearing kittens were most active during daylight hours when the mean ambient temperature was highest. Males demonstrated seasonal differences in activity patterns being most active during daylight hours with peaks in the afternoon or early evening during the winter while in summer, they tended to be more crepuscular in their activities (Kolbe and Squires 2007). A female lynx without kittens had crepuscular patterns of activity similar to those of male lynx during summer (Kolbe and Squires 2007).

Daily movement distances by lynx varied by gender, season, and in relation to prey (Fuller and Harrison 2010). The movement paths of female lynx raising kittens reflected a preference to remain in habitats with dense horizontal cover and good accessibility to prey. In contrast, males appeared to make more linear movements and tended to use skid trails and areas with less dense understory more frequently than females (Fuller and Harrison 2010).

Ward and Krebs (1985) documented an increase in the radius of daily movements from 1.6 miles during periods of moderate to high hare densities, to 3.2 miles during periods of low hare densities. Parker et al. (1983) reported a female's daily movement distance as 5.3 miles in winter and 6.2 miles in summer.

Individual lynx are known to make exploratory long-distance movements beyond identified home range boundaries lasting days to a few months and then return to their original home range. Of two studies in Minnesota, one found exploratory movements were greatest for males during the breeding season in March (Burdett et al. 2007) while the other reported long distance movements at all times of the year (Moen et al. 2006). Lynx also made long distance movements throughout the year often returning to reoccupy their home range in northwestern Maine (Vashon et al. 2012).

Research documented exploratory movements during the summer months by resident lynx in Montana, Wyoming, and southern British Columbia (Apps 2000, Squires and Laurion 2000, Squires and Oakleaf 2005). In Montana, distances ranged from about 9–25 miles, and duration away from the home range was 1 week to several months (Squires and Laurion 2000). Over three consecutive summers, a resident lynx was documented to travel a similar exploratory path (minimum path distance of 452 mi) from its home range in the Wyoming Range to the Wind River and Teton Ranges in western Wyoming (Squires and Oakleaf 2005). Summer exploratory movements were not detected in northcentral Washington (Koehler 1990*a*), nor has it been recorded from the taiga (Mowat et al. 2000). Aubry et al. (2000) speculated that these movements might be more likely to occur in areas with high spatial heterogeneity of habitat.

In the taiga, adult and subadult lynx of both sexes were documented making long-distance movements during periods of prey scarcity (Slough and Mowat 1996, Poole 1997). In the Yukon, rates of emigration in which lynx left established home ranges increased during the cyclic low of hare numbers (O'Donoghue et al. 2001). Dispersal distances of up to 620 mi have been recorded (Mech 1980, Slough and Mowat 1996, Poole 1997). During dispersal, the minimum daily travel rate was1–5 mi per day (Ward and Krebs 1985), suggesting dispersing lynx did not travel farther per day than resident lynx (Mowat et al. 2000).

Mortality of dispersing lynx appears to be high, particularly for those individuals moving long distances into adjacent states that lack lynx habitat or resident populations (McKelvey et al. 2000*b).* The extent to which lynx dispersing from the north can successfully colonize habitat in the south is unknown.

Population and Habitat Status

Canada lynx is a medium-sized cat associated with boreal forests. Their distribution and abundance are linked to those of snowshoe hare, their primary prey (Ruediger et al. 2000). In the conterminous U.S, remnant lynx populations persist in some high-elevation boreal forests of the western and Great Lakes states, tied chiefly to the distribution and abundance of snowshoe hares (Koehler and Aubrey 1994). Although records document lynx occurrence from central through western Montana (Foresman 2001 pages 186-187; MTNHP 2005, 2005a), lynx and their preferred habitats are largely confined to the Rocky Mountains of western Montana.

Lynx habitat generally consists of lodgepole pine, subalpine fir, and Engelmann spruce; while dry forest types (for example, ponderosa pine, climax lodgepole pine) do not provide suitable habitat (Ruediger et al. 2000). East of the Continental Divide, lynx occur in higher elevation coniferous forests with a mix of seral stages, but primarily subalpine fir. In the Northern Rockies lynx habitat is generally found at mid to upper elevations. Lower elevations range from about 3,500 in the north to 7,000 feet in the southern parts of their range within the NRLMD planning area (NRLMD 2007).

Prior to the winter of 2011/2012 when the most extensive lynx research was conducted within the project area, the nearest studied population of lynx was near Seeley Lake, Montana, approximately 40 miles northwest of Lincoln (Squires and Laurion 1999). Kohler and Aubry (1994) suggested that lynx living at the southern extent of their range had larger home ranges, and their suggestion is supported by research in Montana and Wyoming (Squires and Laurion 1999). Lynx are highly mobile and capable of dispersing long distances across habitats generally considered unsuitable (Tumlison 1987, Kohler and Aubry 1994, USDI 2003). Evidence suggests that dispersal events following crashes in snowshoe hare populations may facilitate colonization or re-colonization of marginal habitat, isolated habitat, or habitat of insufficient size to sustain populations (Schwartz et al. 2002, USDI 2003). Dispersal events may also explain synchronization of population dynamics of lynx in geographically distant areas.

Within the planning area lynx have been documented on either side of Montana Highway 200 for years. Currently the most persistent and concentrated use by lynx is in the Dalton Mountain area south of Highway 200 where researchers trapped and collared four individuals, 2 males and 2 females, during the 2011/2012 winter. The researchers also captured and collared a male in the Alice creek drainage in the northeastern part of the project area. During this effort a male and female were also captured and collared in the Monture creek drainage on the Seeley district of the Lolo NF. This research confirmed reproduction in 2012 by one female in the Dalton Mtn. area and the female in Monture creek. The collared lynx in Monture creek were predominantly using habitat created by the 1988 Canyon creek fire that extends eastward across much of the lower Scapegoat Wilderness within the project area. Much of the burned habitat now supports healthy hare populations and lynx tracks and observations of individuals have been reported in the area in recent years. Prior to the 2003 Snow Talon fire which burned 34,000 acres, the Copper creek drainage was known to support the highest hare and lynx densities within the project area. Although lynx have since occurred within the Snow Talon burn area forest regeneration is currently not mature enough to support the high hare densities needed to sustain lynx use. Other known lynx occurrences within the project area include an incidental trapping of a lynx in the Stemple pass area around 2002 and various track observations north of Highway 200 primarily in the upper Beaver creek.

Lynx Critical Habitat

In February 2008 the FWS released a revised lynx critical habitat proposal in response to court rulings. Critical habitat was designated on February 25, 2009 when the FWS published the *Revised Designation of Critical Habitat for the Contiguous United States Distinct Population Segment of the Canada Lynx; Final Rule* (USDI 2009). The Final Rule became effective on March 27, 2009.

The entire action area is within lynx critical habitat. Designated critical habitat incorporates all Helena National Forest lands north of Highway 12.

Critical habitat is one of several provisions of the ESA that aid in protecting the habitat of listed species until populations have recovered and threats have been addressed so that the species can be removed from the list of threatened and endangered species. Critical habitat designation is intended to assist in achieving long-term protection and recovery of lynx and the ecosystems upon which they depend. Section 7(a)(2) of the ESA requires consultation for federal actions that may affect critical habitat to avoid destruction or adverse modification of this habitat. Under the Act, effects are determined on the basis of whether, with implementation of the proposed Federal action, the affected critical habitat would remain functional (or retain the current ability for the PCE and its attributes to be functionally established) to serve its intended conservation role for the species (USDI Fish and Wildlife Service 2009, p. 8644).

Critical habitat is by definition the areas that are essential for recovery of the species. In defining lynx critical habitat, the USFWS identified the physical and biological features essential to the conservation of the species that may require special management considerations or protections. The physical and biological features are represented by the primary constituent element (PCE) and its attributes laid out in a specific quantity and spatial arrangement to be essential to the conservation of the species. Based on current knowledge of the life history, biology, and ecology of the species, the Service defined the primary constituent element as ***boreal forest landscapes supporting a mosaic of differing successional forest stages*** and containing:

1. Presence of snowshoe hares and their preferred habitat conditions (dense understories of young trees, shrubs or overhanging boughs that protrude above the snow, and mature multistoried stands with conifer boughs touching the snow surface)
2. Winter snow conditions that are generally deep and fluffy for extended periods of time
3. Sites for denning that have abundant coarse woody debris, such as downed trees and root wads
4. Matrix habitat (e.g., hardwood forest, dry forest, non-forest, or other habitat types that do not support snowshoe hares) that occurs between patches of boreal forest in close juxtaposition (at the scale of a lynx home range) such that lynx are likely to travel through such habitat while accessing patches of boreal forest within a home range

Lynx use habitat at a landscape scale, which means that no single locality (small scale) contains all of the required habitat elements that lynx need to ensure survival and reproduction. Therefore, individual portions of each unit (for example, an individual forest stand) may not contain all of the attributes of the PCE listed above, however, each unit, as a landscape, does contain each of the attributes of PCE and it is the landscape as a whole that contains the PCE (USDI Fish and Wildlife Service 2009, p. 8638).

It is recognized that LAUs contain a mix of lynx habitat and matrix as defined in the final rule designating lynx critical habitat. Matrix (e.g., hardwood forest, dry forest, non-forest, or other habitat types that do not support snowshoe hares) occurs between patches of boreal forest in close juxtaposition (at the scale of a lynx home range), such that lynx are likely to travel through such habitat while accessing patches of boreal forest within a home range. Since the matrix provides limited snowshoe hare resources or other life requisites for lynx, there are no conservation measures specifically aimed at management of matrix habitat, except as related to maintaining connectivity.

Sensitive Species

Gray Wolf (*Canis lupus*)

Gray wolves are capable of inhabiting virtually any kind of natural habitat occupied by ungulates or other large prey in temperate regions. Acceptable habitat includes forests of all types:

rangelands, shrubland, steppes, deserts, wetlands, alpine regions, tundra, and barren ground areas, as well as human-influenced environments such as agricultural lands and logged forests. Wolves do not have any particular habitat requirement other than a preference for avoiding areas with heavy human use whenever possible (USDI Fish and Wildlife Service, 1987).

Wolf packs occupy specific territories, typically ranging from 125 km2 to 550 km2 (Mech 1970 cited in Tucker 1988; Peterson 1977 cited in Tucker 1988). The number of individuals in a pack and the availability of prey determine territory size (USDI et al. 2003). Daily pack movements vary, as do seasonal movements: distances traveled are greater in winter than in summer. Lone wolves cover larger areas than packs, and their ranges may overlap two or three pack territories (Mech 1973 cited in Tucker 1988; Fritts and Mech 1981 cited in Tucker 1988).

Wolves are generally not considered migratory but they may wander great distances within their home ranges searching for prey. When local population increases, young adults disperse to new areas—the primary source of new wolves that appear regularly in the Blackfoot landscape. Vegetative cover affects wolf survival by providing shelter for prey such as deer and elk and as a means for quickly eluding humans. In general, healthy wolves themselves need little cover to deal with heat, cold, or severe weather (Mech 1970 cited in Tucker 1988).

Wolf dens, for bearing and protecting pups, may be inhabited year after year, though pups are sometimes moved from one den to another. Den sites are typically dug in sandy and well-drained soils near water, although they can be located in a variety of landforms (Mech 1970 cited in Tucker 1988; Fritts 1982 cited in Tucker 1988). Aside from these local site conditions, the primary condition allowing successful wolf reproduction is isolation from human meddling.

Wolves typically hunt in packs but they may do so individually as well (Mech 1970 cited in Tucker 1988; Fritts 1982 cited in Tucker 1988). Wolves prey primarily on large wild mammals such as deer, elk, moose, bison, and bighorn sheep (Kunkel et al. 1999; MFWP 2003). However, they are opportunistic foragers and will take advantage of other foods, including domestic livestock, dogs, small and midsized mammals (such as ground squirrels or beavers), birds (particularly grouse and waterfowl), fish, green vegetation, and fruits, depending on their availability and ease of capture (Kunkel et al. 1999). Wolves are also successful scavengers.

Wolf Recovery Plan

The Northern Rocky Mountain gray wolf (*Canis lupus irremotus*) was listed as an endangered species in 1973. Since 1987, wolf recovery has proceeded according to steps outlined in the *Northern Rocky Mountain Wolf Recovery Plan* (USDI Fish and Wildlife Service, 1987). The Plan was designed to provide direction and coordination for recovery efforts. It is not a decision-making document, however, and has been subject to modification as new information has become available, species status has changed, and tasks have been completed.

The Blackfoot travel planning area is located in the southwestern sector of the Northwest Montana Recovery Area.

In assessing the potential impacts of HNF projects on wolves in this area, we apply relevant provisions of the Wolf Recovery Plan and look to the most recent research findings and management advice from MFWP and USFWS wolf biologists to deal with specific local issues. In general, we focus on (1) protecting active denning and rendezvous sites from human interference, (2) maintaining abundant big game (particularly elk) as a prey base, (3) reducing factors that might lead to negative confrontation with humans (open roads, untended livestock), and (4) retaining sufficient distribution of forest cover to provide for local screening and concealment (Oakleaf et al. 2006; USDI Fish and Wildlife Service, 1987).

Wolf Dispersal

The wolf population in Montana has increased from around 35 animals in 1990 to 653 (39 breeding pairs) in 2011. Overall the population trend has been steadily increasing, with a 15 percent increase in 2011(Sime et al. 2010). Yearly increases in population have occurred in spite of a number of wolves being killed each year, mostly by USDA Wildlife Services, to reduce livestock losses: In Montana, this amounted to 110 of 168 known mortalities in 2008 and 145 of 255 mortalities in 2009. So, the annual increment in surviving young has been more than sufficient to overcome losses to natural and human-generated mortality to this point—including the loss of 72 animals during Montana's first annual wolf hunting season in the fall of 2009. The relisting of the wolf as a threatened/ endangered species eliminated the 2010 regulated wolf hunts in Montana and Idaho. But in spite of the resurrection of the hunts in 2011—with 165 wolves killed in Montana—MFWP has estimated a 15 percent rise in the counted population.

The Blackfoot travel planning area lies entirely within the Northwest Montana Recovery Area. A natural southward migration of wolves from Canada has been gradually populating this region since the mid-1980s—and continues to do so [Rocky Mountain Wolf Recovery Annual Reports 1995-2011; Interagency Annual Reports (Sime et al. 2007, 2008, 2009, 2010). Individual wolves began to be regularly reported in the Blackfoot landscape in the late 1980s.The number of packs within the project area has grown steadily in recent years with most non-hunting mortality stemming from management actions by state and federal agencies attempting to minimize predation on livestock. Until 2010, all verified packs on the HNF had been located in the Blackfoot and Divide landscapes, which provide the primary north-south dispersal zone for wolves moving southward from northern populations.

Recent Actions

By the end of 2002, the biological requirements for wolf recovery in the northern Rockies had been met (at least 10 breeding packs each in Montana, Idaho, and Wyoming for 3 consecutive years). A state management plan for Montana was in place by 2004, and in 2004-2005, day-to-day management of wolves in Montana was transferred from the USFWS to MFWP.

The USFWS initially removed the northern Rocky Mountain gray wolf from the Endangered Species list in February 2008. Litigation led to a court injunction and restoration of wolves to the list in October 2008. The USFWS, after revising its original delisting order, once again removed the wolf from the Endangered Species List in May 2009. Environmental groups again took the USFWS to court seeking to reinstate endangered species status, and in August 2010, Federal District Court in Missoula ruled that the Service could not drop the wolf from the List in some states (Montana and Idaho) and continue to list it in another (Wyoming). The wolf thus returned to its pre-May-2009 status as an "endangered" species in the Blackfoot landscape. In April 2011, after a negotiated agreement between environmental groups and the USFWS to again delist the wolf was scuttled by Federal District Court, the U.S. Congress approved a measure to remove the wolf from the Endangered Species List in Montana, Idaho, and parts of Washington, Oregon, and Utah as of June 2011. On the HNF, wolves are again classified as a "sensitive" species.

Fisher (*Martes pennanti*)

Fishers are small to mid-sized carnivores strongly associated with structurally complex forest stands, most often at low and middle elevations rather than in high montane forests (Powell and

Zielinski 1994). In the Rocky Mountains, fishers most often use stands dominated by grand fir, Engelmann spruce, and lodgepole pine (Jones 1991). Old-growth and mature riparian forests provide particularly good habitat. Fishers make use of hollow logs, standing tree cavities, and dense tree crowns (often witch's brooms) for denning, rearing young, resting, and general refuge (Jones 1991). They prey on a variety of small and mid-sized mammals (snowshoe hares, porcupines, squirrels, voles), as well as birds, and carrion (Heinemeyer and Jones 1994).

Fisher habitat is generally defined as mesic, low-to-mid elevation lands with dense canopy forests. Fishers appear to use landscapes at different spatial scales for different behaviors and activities (Powell and Zielinski 1994; Weir and Harestad 2003). Fisher habitat needs are related to their life history needs, including the need to locate and capture prey, locate resting sites, and defend their territory. Seasonally, fishers may need to travel farther or more frequently to find enough food to raise young, locate mates, or establish new territories (Lofroth et al. 2010). To meet those needs, fishers probably make decisions based on location and abundance of prey, environments in which they can hunt effectively (i.e. snows not too deep), and environments that provide escape cover from potential predators.

Studies of fisher habitat use have mainly been conducted using radio telemetry to study fisher movements and habitat selection. In a review of fisher habitat studies conducted in western North America, Lofroth et al. (2010) found the following generalities:

- Fisher occur in a variety of low and mid-elevation forested plant communities.
- Fisher are associated with moderate to dense forest canopy.
- Fisher home ranges include a diversity of forest successional stages and plant communities.
- Active fisher are frequently associated with complex forest structure.
- Fisher rest sites are strongly associated with moderate to dense forest canopy and elements of late-successional forests.
- Fishers typically rest in large deformed or deteriorating trees and logs.
- Cavities in large trees are a critical resource.

In the west, optimum habitat appears to be late-successional coniferous forests in summer and young to mature conifer forests in winter. Preference for lower elevation areas may be seen, due to difficulty in traveling in deep snow (Vinsignificant 2003). Complex forest structure is important for providing cover and supporting prey species. Snags, woody debris, and hollow logs, and tree cavities provide rest sites and winter den sites.

Forest plant communities occupied by extant fisher populations in western North America range from pure hardwood to mixed conifer-hardwood, to pure conifer stands, and for the most part, fisher home range composition tends to reflect the forested plant communities found in the study areas (reviewed in Lofroth et al. 2010). Fisher habitat in USFS Region One includes spruce-fir, Douglas fir, cedar-hemlock-Douglas fir, grand-fir-Douglas-fir, and pine-Douglas-fir (reviewed in Lofroth et al. 2010). Hardwoods may be an important component of fisher habitat where they are available, but their importance should not be overemphasized relative to conifers (Zielinski et al. 2004).

The most consistent predictor or fisher occurrence at large spatial scales is moderate to high amounts of contiguous canopy cover (Lofroth et al. 2010). In Idaho, Jones (1991) found that fishers avoided openings and forested areas with 40 percent or less canopy cover.

The structural diversity of forest stands may be a more important factor for fisher than are plant community types. Nearly all studies have shown a positive relationship with mid-successional and/or late-successional forests, and an avoidance of the youngest successional stages in their home ranges (e.g., non-forested and herb-shrub areas; reviewed in Lofroth et al. 2010). However, some studies have shown positive association with young successional stages such as pole-sapling and young forest (e.g., Jones 1991), possibly because of prey resources associated with these environments. In particular, Jones (1991) observed fisher shifting their use of habitat seasonally, with mature and old-growth forests being used in the summer, and young forest cover types used in the winter. Younger stands have high prey availability that can help sustain fishers in the winter months, although denning and resting sites in these areas may not be as abundant (Jones 1991; Jones and Garton 1994).

Fishers appear to be more flexible in their use of various forest successional stages when active, i.e., for foraging or moving, than when resting or denning (reviewed in Lofroth et al. 2010). Resting sites provide thermoregulatory benefits, protection from predators, proximity to prey, and secure locations for consuming prey (Zielinski et al. 2004; Aubrey and Raley 2006). In a meta-analysis of resting site habitat from the Pacific coastal states and provinces[3], Aubrey et al. (in review) found that fishers selected resting sites in areas that had denser overhead cover and contained a greater volume of logs and a higher prevalence of large trees and snags (i.e. greater basal areas of large conifers, hardwoods, and snags, and larger diameter conifers and hardwoods) than available sites. Fishers also selected resting sites located on relatively steep slopes and that were close to water, patterns that have also been reported in other studies (Zielinski et al. 2004).

Various studies have reported fisher associations with water or riparian areas (reviewed in Lofroth et al. 2010). The majority of fisher locations from studies in the Northern Rockies were near riparian areas: 65 percent of locations were within 650 feet of water in the Cabinet Mountains (Heinemeyer 1993), and 70 percent of locations were within 330 feet of riparian areas in central Idaho (Jones 1991). Thus we can see that riparian habitats may be especially useful for fishers, but we did not want to overlook upland habitats. Aubrey et al. (in review) hypothesize that the selection of sites near water may reflect selection for attributes such as a greater availability of prey and alternative resting structures, or their use as travel corridors. Whatever the causal factors, multiple studies have observed patterns of association with steep slopes, proximity to water, and drainage bottoms.

Fishers rest primarily in live trees, and will often select trees with rust brooms or mistletoe, which are structural features that provide rest platforms (reviewed in Lofroth et al. 2010). Snags are used less often as resting sites; when snags are used, they are usually large snags with large cavities. Coarse down wood is also used as rest structures, including hollow portions of logs or spaces created by coarse down wood under the snow.

[3] Data analyzed came from 8 studies ranging from the spruce-dominated boreal forests of British Columbia through the mixed-conifer forests of SW Oregon and NW California to mixed conifer-hardwood forests of the Sierra Nevadas. Additionally, study areas including high levels of genetic variation among the fisher populations studied. Thus, the authors suggest broad applicability of results to fishers throughout their range.

Fishers are obligate users of tree cavities for reproductive dens (Powell and Zielinski 1994; Lofroth et al. 2010). Cavities in both live and dead trees are utilized, and provide both thermal insulation and security from potential predators for kits. Females utilize internal cavities with relatively small openings for natal dens (using openings as small as 3-4 inches); openings may be created by branches breaking away from the bole, fire scares, cracks in the bole, and pileated woodpecker excavations (reviewed in Lofroth et al. 2010). Size of trees used for natal and/or post-reproductive dens ranged in size from 13 inches d.b.h. to greater than 30 inches d.b.h. (reviewed in Lofroth et al. 2010).

Like lynx and marten, fishers avoid large openings (parks, meadows, early seral clearcuts, and burns). Also, like other forest carnivores, fishers maintain low population densities and range widely in search of prey and of significant habitats (structurally complex forest) (Powell and Zielinski 1994). Because of their aversion to openings, they seek out forested connections between the habitat sites in which they focus activity (Powell and Zielinski 1994). These connecting habitats may consist of any number of forest formations and seral stages and do not necessarily exhibit the complex structure and prey density of preferred habitat sites (Heinemeyer and Jones 1994).

The importance of riparian and wetland forest has been noted by researchers in several areas of North America, including Montana (Heinemeyer and Jones 1994). In Montana, fishers prefer areas within 200 meters of water (Heinemeyer and Jones 1994). Investigators have documented that riparian corridors are often used as travel routes (Heinemeyer and Jones 1994). Jones (1991) suggests that preferred resting habitat and prey are more available within forested riparian areas.

Beginning in the 19th century, fisher populations were decimated throughout most of western North America by trapping, which continued unabated into the 1930s, and by loss of significant habitat to logging. Fisher populations have rebounded naturally in some areas and have been reintroduced in others (as in the Cabinet Range of northwest Montana, 1988-90). Still, fisher numbers remain low in the northern Rockies, leaving local populations more vulnerable to decimating factors than species with larger, more diverse populations.

In June 2011, the US Fish and Wildlife Service determined that listing the fisher as threatened or endangered was not warranted at the time (50 CFR Part 17). This finding was in response to a petition to list a distinct population segment (DPS) of the fisher in its U.S. Northern Rocky Mountain range, including portions of Montana, Idaho, and Wyoming. The USFWS determined that fishers in the Northern Rocky Mountains met the definition of a DPS because they are geographically separated from other fisher populations, and because the loss of this population would result in a significant gap in the range of the species and the loss of a unique genetic identity found nowhere else within the range of the species. Based on the existence of fisher throughout much of its historic range in Montana and Idaho, the USFWS determined that "the existing state of the regional landscape is conducive to supporting fisher, but it is not clear what the capacity of the system is to support, in the long-term, a self-sustaining population or a number of interacting subpopulations" (USDI Fish and Wildlife Service 2011).

The most recent known fisher trapped in the project area was in December 2001along the western edge of the project area. Annual surveys conducted on the HNF by Wild Things Unlimited since 2006, have not detected fishers although FS hair snag surveys in 2008 detected two individual fishers along the western portion of the project area. Subsequent FS hair snare surveys conducted by FS personnel in 2011 and 2012 failed to detect fisher in either the Lincoln or Seeley RD. Reports of fishers in the Blackfoot landscape have been rare, and have not been sufficient to allow an estimation of population numbers. The HNF is on the eastern edge of the distributional range of this species. Action alternatives would minimize the potential for disturbance or displacement and overlap with reproductive period. Primary threat to individuals is trapping.

In the Blackfoot landscape, most suitable habitat—low/mid elevation mature and old-growth riparian forest—is present only in relatively small plots, with more marginal habitat available in larger blocks. This habitat is patchy in that it is separated, often by some distance, from other such tracts; but these sites are usually interconnected via forest habitat that, while unsuitable for long-term residence, provides an adequate travel environment.

The ongoing bark beetle epidemic across the Blackfoot landscape is resulting in an increasing snag and log density (both significant habitat elements) while also eliminating live forest canopy cover. Its impact will be limited since most habitat changes are occurring in drier upland pine forests, rather than in riparian sites.

The Region One Fisher Habitat Model (USDA Forest Service 2012) was used to estimate fisher habitat for the analysis area. Fisher ranges in Montana and Idaho are among the largest home ranges reported for fishers, with females averaging approximately 10,000 acres, and males averaging approximately 22,000 acres (Jones 1991). Based solely upon home range sizes, the analysis area could be capable of supporting several males and females, providing that the majority of land is suitable fisher habitat.

Harvest data from Montana have been used to suggest population trend, although such results should be interpreted cautiously, given the inherent biases of trapping, and the lack of rigor for determining scientifically valid population estimates. Trapping records from Montana show a consistent yearly harvest of roughly seven to nine individuals, with 198 fishers trapped in Montana since 1983 and the continual presence of a high proportion of younger animals in the harvest (MFWP 2010). These data suggest that reproduction is occurring in Montana. MFWP (2010) suggests that the younger age male dominated harvest is indicative of a low harvest rate, and MFWP further interprets that limited track survey data and harvest records indicate a consistent population status over time.

Harvest records provide the most reliable information on the occurrence of fisher. Harvest records indicate two fisher were trapped in1997 and 1998 near Lincoln and another is known from 2001 and noted above. Fishers are very uncommon east of the Continental Divide, as seen in the trapping records and recent fisher surveys. Probable reasons for this observation include very limited habitat and drier forest conditions.

Fishers have more recently been recorded on the Forest through survey efforts conducted in 2007, 2008, and 2009 (See data and results in district files). Potential habitat – post kill (which considers the current pine beetle epidemic throughout the forest) has been estimated in the project area based on methods described in the *Methodologies and Assumptions* section. Habitat has been modeled for both summer and winter habitat (See *Criteria for Wildlife Models Helena National Forest* for definitions). Potential fisher summer habitat has been modeled within the project area, approximately 5,120 acres and winter habitat is approximately 117,087 acres. There are an estimated 59,511 acres of fisher summer habitat and 212,008 acres of winter habitat across all Helena National Forest landscapes.

Primary fisher habitat on the Forest is patchy but widely distributed. It is increasing as forests age. Insect-generated mortality in mature forest is creating more open canopy (unfavorable) but more snags and woody debris (favorable). Primary habitat is interconnected by forested travel habitat. Population is widely distributed but small; precise numbers are unknown.

Threats can affect an individual, a population, or the environments that support a species. For fishers, there is no single dominant threat to their distribution or abundance. Rather, a host of anthropogenic and natural events can have negative effects on fishers. Some threats to fisher include: Forest vegetation management, prescribed fire, climate change, roads, wildfire, disease, trapping, and other predators.

Wolverine (*Gulo gulo*)

The wolverine is currently proposed for listing as a distinct population segment of the North American wolverine occurring in the contiguous United States, as a threatened species under the Endangered Species Act. The U.S. Fish and Wildlife Service published the proposal in the Federal Register on 02/04/13. It was the finding of the Service that the designation of critical habitat for the species is not determinable at this time. Unless extended, the Service is required to make a determination on the proposal within a year.

The Services determination for proposing to list the wolverine cites “habitat loss due to increasing temperatures and reduced late spring snowpack due to climate change is likely to have a significant negative population-level impact on wolverine populations in the contiguous United States. In the future, wolverine habitat is likely to be reduced to the point that the wolverine in the contiguous United States is in danger of extinction.”

On December 14, 2010 the U.S. Fish and Wildlife Service (USFWS) announced a12- month finding on a petition to list the North American wolverine (Gulo gulo luscus) as an endangered or threatened species under the Endangered Species Act of 1973, as amended. After review of all available scientific and commercial information, the USFWS found that the North American wolverine occurring in the contiguous United States is a distinct population segment (DPS) and that addition of the DPS to the List of Endangered and Threatened Wildlife was warranted, but precluded, making it a candidate species (USFWS 2010) as well as a sensitive species. Now that the wolverine is proposed for federal listing it is no longer addressed as a Region 1 FS Sensitive species or a USFWS candidate species.

The following analysis for wolverine includes excerpts of information from the USFWS proposal to list the wolverine and the 12-month finding that are relevant to Montana and represent the best available scientific information available.

Analysis Area

The direct, indirect, and cumulative effects analysis area for wolverines is the planning area. The planning area represents a large geographic area capable of supporting several individuals. The analysis area serves to adjoin habitats and /or populations to the north and south. Wolverines are known to occur throughout various parts of the planning area. Higher elevations that support late season snowpack both within and outside the Scapegoat Wilderness have the greatest potential to provide wolverine denning habitat.

Population and Habitat Status

The Montana Natural Heritage database lists the global status of wolverine as G4 defined as ‘apparently secure, though it may be quite rare in parts of its range, and/or suspected to be declining’. The statewide status is S3 defined as ‘potentially at risk because of limited and/or decline in numbers, range, and/or habitat, even though it may be abundant in some areas'. See http://fieldguide.mt.gov/displayClasses.aspx?Kingdom=Animalia

In the 12-month finding, the USFWS stated that wolverines likely exist as a metapopulation in the contiguous United States (USFWS 2010, pg. 78031). A metapopulation is a network of semi-isolated populations, each occupying a suitable patch of habitat in a landscape of otherwise unsuitable habitat. Individual subpopulations may go extinct or lose genetic viability, but are then ''rescued'' by immigration from other subpopulations, thus ensuring the persistence of the metapopulation as a whole. If metapopulation dynamics break down, either due to changes within subpopulations or loss of connectivity, then the entire metapopulation may be jeopardized. The USFWS believes this outcome is likely for wolverine in the long-term, due to their naturally low reproductive rates, low densities, and habitat that may become increasingly more isolated due to climate change, as described below.

Wolverines naturally occur in low densities of about 1 wolverine per 58 mi2 with a reported range from 1 per 25 to 130 mi^2 (Hornocker and Hash 1981, Copeland and Yates 2006, Squires et al. 2007). No systematic population census exists over the entire current range of wolverines in the contiguous United States, so the current population level and trends remain unknown. However, based on current knowledge, the USFWS estimates that the wolverine population in the contiguous United States numbers approximately 250 to 300 individuals (USFWS 2010, pg. 78031).

As stated in the 12-month finding, "Wolverine records from 1995 to 2005 indicate that wolverine populations currently exist in the northern Rocky Mountains"…and that "the bulk of the current population occurs in the northern Rocky Mountains."…"within the area known to currently have wolverine populations, relatively few wolverines can coexist due to their naturally low population densities, even if all areas were occupied at or near carrying capacity. Given the natural limitations to wolverine population density, it is likely that historic wolverine population numbers were also low" (USDI Fish and Wildlife Service 2010, pg. 78032).

The USFWS believes that densities and population levels in the northern Rocky Mountains where populations currently exist are likely not substantially lower today than they were historically. "The northern Rocky Mountain population (north of Wyoming) was reduced to historic lows or possibly even extirpated during the early 1900s, and then increased dramatically in the second half of the 1900s as predator control efforts subsided and trapping regulations became more restrictive (Aubry et al. 2007, p. 2151). This increase likely indicates a population rebound from historic lows" (USDI Fish and Wildlife Service, 2010, pg. 78035).

The occurrence of wolverines within the planning area has a long history based upon historic trapping records and various reports of tracks or observations. Until recently however, systematic surveys efforts had not been conducted in the planning area. Wild Things Unlimited (WTU) has conducted winter backtracking while collecting hair, scat, or urine samples for DNA analysis on portions of the Helena NF in each consecutive year since the 2006/2007 winter. Initial efforts were primarily focused south of the planning area in the MacDonald Pass area on either side of Highway 12. During the 2009/2010 winter, WTU began conducting annual lynx and wolverine survey efforts within the planning area.

From 2006-2012, WTU survey efforts have yielded DNA confirmation of seven individual wolverines on the Forest. Five of the seven were confirmed within the planning area since December of 2009 (Wild Things Unlimited 2012). Various other samples collected during backtracking efforts did not contain sufficient quality DNA for species identification or in some cases individual and gender recognition. One sample collected in the northern half of the planning area was confirmed as wolverine but individual and gender recognition was not able to be determined from the sample. Numerous samples were also collected during the 2012/2013 winter although DNA analysis is not yet completed. WTU has also utilized remote cameras photographing various wolverines that likely represent additional individuals that have not been identified by DNA confirmation. While some of the confirmed individuals may be transient, such as a male that was confirmed through DNA on the Beaverhead/Deerlodge NF in 2009/10 and then within the planning area in 2011/12, others are likely residents. To date these survey efforts have focused on a limited portion of the planning area. Because much of the planning area has not been extensively surveyed there is a high probability of other individuals occurring within the planning area.

Another wolverine confirmation within the planning area was from February of 2009 when a female wolverine was incidentally caught in a leg hold trap south of Highway 200. Since the individual was trapped within WMU4 which is closed to wolverine trapping, that individual was released and assumed to have survived.

Additional field surveys as part of the Southwest Crown carnivore monitoring program were conducted during the winters of in 2011/12 and 2012/13. These surveys also involved backtracking and the collection of genetic samples for DNA analysis. During the first winter wolverine tracks were recorded across various parts of the planning area with one wolverine DNA confirmation from the Scapegoat wilderness. Efforts from the 2012/13 surveys have not been summarized yet and DNA analysis has not been completed.

Overall, the infrequency of verified reports, ability of individuals to cover great distances in short timeframes, naturally low population densities, and secretive nature make it difficult at best, to make any assumptions about wolverine densities, home ranges, reproductive status, or specific habitat use within the planning area and beyond. What is known is that wolverines do occur at low densities within the planning area. The Federal Register (USDI Fish and Wildlife Service, 2010) cites several authors who note that wolverines naturally occur in low densities that average about one wolverine per 58 square miles. Using this density average for a simple extrapolation would suggest that the 582 sq. mile planning area may support approximately ten wolverines.

Life History

Wolverine is a solitary and highly mobile species that tends to inhabit remote areas and occurs at relatively low densities (Banci 1994, Pasitschniak-Arts and Larivière 1995). Wolverines range widely from subalpine talus slopes to big game winter ranges, occupying higher ranges in the summer and riparian habitats in the spring. Ruggiero and others (1999) found that wolverines used higher elevations in the snow-free season to avoid high temperatures and human activity. In the northern Rocky Mountains, wolverines make extensive use of coniferous forest (Foresman 2001; Hornocker and Hash 1981). While wolverines are generally regarded as wilderness animals, they may include clear-cut areas in their home ranges (Hornocker and Hash, 1981) and are reported to scavenge around northern Canadian communities (Banci 1994). Wolverines exhibit some fidelity to particular areas for months or years, however, the species is thought to have a flexible behavioral system when changing environmental conditions (e.g., food supply), supersedes boundary considerations (Hatler 1989).

Wolverines range widely from subalpine talus slopes to big game winter ranges, occupying higher ranges in the summer and riparian habitat in the spring. Ruggiero and others (1994) found that wolverines used higher elevations in the snow-free season to avoid high temperatures and human activity. Wolverine habitat is best defined in terms of adequate year-round food supplies in large sparsely inhabited areas, rather than in terms of particular types of topography or plant associations. No particular habitat components or habitat management techniques can presently be singled out for wolverine; success of wolverine may relate to the availability of large areas of remote, rugged uplands that are difficult to access by humans (Hatler 1989).

Wolverines occur in low densities in all places they have been studied (Ruggiero et al. 1994). This is generally attributed to naturally low reproductive rates and delayed sexual maturity of the species. Food availability seems to be the primary factor determining movement and specific habitat use.

The wolverine is primarily a scavenger, although it will acquire most of its own food during the summer months. They are opportunistic feeders, consuming a variety of small and large animals. In both Montana and Idaho, big game carrion appears to be the major food source with snowshoe hares, squirrels and small mammals making up most of the rest of the diet (Copeland and Harris 1994; Hornocker and Hash 1981). Winter is probably the most difficult time for wolverines to find food. Research on marked wolverines in Idaho showed animals did not move to big game winter range as expected, but fed on carcasses of animals that probably died during the late summer and fall (Copeland and Harris 1994). The presence of large predators such as mountain lions and wolves, and wounding losses from hunting may be important sources of carrion.

Female wolverines use two kinds of dens for reproduction. Females use natal (birthing) dens to give birth and raise kits early postpartum. Prior to weaning, females may move kits to one or multiple alternative den sites, which are referred to as maternal dens. The movement of kits from natal to maternal dens may be a response by the female to den disturbance, better food availability in the new location, predation risk, or deteriorating den conditions in the natal den (Magoun and Copeland 1998). Female wolverines use natal dens that are excavated in snow. Persistent, stable snow greater than 5 feet deep appears to be a requirement for natal denning, presumably because it provides security for offspring and buffers cold winter temperatures (Copeland 1996; Magoun and Copeland 1998; Banci 1994; Inman et al. 2007).

In southwest Montana, Copeland (1996) found that females selected natal den sites in glacial cirque basins or at the vegetation/rock interface at higher elevations and commonly left dependent kits at rendezvous sites (post-weaning dens) comprised of large boulder talus or riparian areas associated with mature overstory and dense deadfall. Inman et al. (2007) characterized rendezvous sites as natural (unexcavated) cavities formed by large boulders, downed logs (avalanche debris), and snow that may be used through early July. In Montana and Idaho, researchers have documented wolverine in forests with low to medium canopy closure in areas dominated by subalpine fir and indicate they rarely used dense young timber, burned areas, or wet meadows (Wittmer et al.1998).

Methodology

For this analysis wolverine denning habitat was mapped using two different models: (1) the Natal denning habitat model is based on Hillis and Kennedy (2003) which focused on areas of late season snow persistence; (2) the Potential denning habitat model was initially produced for the Lincoln RD based on Copeland’s (1996) study of wolverine denning habitat; Heinemeyer, Aber and Doak’s (2001) denning habitat model and survey; literature reviews; discussions with numerous wildlife biologists; and on-the-ground knowledge of the landscape.

The primary parameters used to map natal wolverine denning habitat include:

- Cirque basins buffered by a 2 mile width.
- Minimum elevation of 6,200 feet.
- Maximum slope of 30 percent to exclude avalanche chutes.

The parameters used to map potential wolverine denning habitat include:

- All rock cover types greater than 6,200 feet in elevation.
- All open meadow cover types greater than 6,200 feet in elevation.
- Subalpine fir, whitebark pine, Engelmann spruce, and open meadow cover types within 500 feet of 1 and 2.
- Greater than 35 percent and less than 100 percent slope.
- All north aspects (N, NE, NW) – High potential
- All south, east, and west aspects – Potential

The parameters of both denning habitat models were chosen to map the elevational band of habitat most commonly used by denning female wolverines (high-elevation, cirque basins at or above timberline and the subalpine meadows and/or subalpine forest types within 500 feet below these basins on slopes where snow would remain throughout the denning season). The natal denning habitat model incorporates a broader landscape by applying a 2-mile buffer around cirque basins, not extending below 6,200 feet elevation, whereas, the potential denning habitat model identifies the specific areas meeting the criteria without buffering.

The potential denning habitat model includes both potential and high potential denning habitat. High potential includes all north aspects while potential includes all other aspects. North aspects reflect those habitats with the most stable and persistent snowpack throughout the denning period thus having higher potential to serve as denning habitat than aspects included in potential denning habitat.

Radio telemetry studies have found that natal dens in Idaho occur above 8,200 feet on rocky sites, such as north-facing boulder talus or subalpine cirques in forest openings, and in Montana, occur above 7,874 feet and are located on north aspects in avalanche debris, typically in alpine habitats near timberline. These telemetry study findings suggest that the modeling parameter of 6,200 feet and above may include lower habitats less likely to be selected for denning by female wolverines and similarly, modeled Potential denning which includes all aspects other than N, NE, NW may include habitats less likely to be selected due to lower snow retention or persistence.

Both habitat models reflect the greatest concentration of wolverine denning habitat as occurring within the Scapegoat Wilderness and on lands adjoining its southern boundary. While all modeled natal denning habitat occurs north of Highway 200, potential and high potential denning habitat is most concentrated in the northern portion of the planning area but also occurs as scattered parcels in the southern half of the planning area, particularly along the Continental divide.

Similarly, the North America Persistent Spring Snow Cover model developed by Copeland (2009), shows the greatest abundance of late season snow persistence in the northern portion of the planning area, particularly in the Scapegoat Wilderness, but also reflects areas of late season snow persistence in the southern portion of the planning area. This model was based on snow persistence until May 15 over a 7-year period from 2000-2006.

Although potential/high potential denning habitat is more widely distributed throughout the planning area 33 percent of potential and 37 percent of high potential occur within the Scapegoat Wilderness.

Mortality Risks

Human/Wolverine Interactions - Wolverines have few natural predators although both interspecific and intraspecific mortalities have been documented. Human-caused mortality is the primary factor affecting wolverine survivorship, with fur harvest being the leading cause of mortality in areas where trapping occurs (Banci 1994, pg106-108; Krebs and Lewis 2003). Road and rail kill is another important source of human-caused mortality. Human land-use activities have affected wolverine populations, mostly those activities that fragment or supplant habitat (for example, human settlement, extensive logging, and recreational developments) (Banci 1994, pg. 115-116). In British Columbia, a study of the effects of transportation corridors showed wolverine to avoid areas within 100 m of the Trans-Canada Highway (Austin 1998, pg. 30). In the same study wolverines frequently used sparsely-used ski trails for travel; but levels of human activity that may discourage use by wolverines are unknown (Austin 1998, pg. 33).

Trapping - More than any other factors, wolverines are susceptible to mortality through hunting and trapping and human-caused disturbance near den sites (Hornocker and Hash 1981; Copeland 1996; Weaver et al. 1996). Wittmer et al. (1998) suggested long-term conservation of wolverine in the analysis area through maintenance of large, remote areas of habitat and engaging in management activities that do not decrease ungulate prey density.

As stated in 12-month finding (USDI Fish and Wildlife Service, 2010, pg. 78035): "Despite the impacts of trapping on wolverines in the past, trapping is no longer a threat within most of the wolverine range in the contiguous United States. Until MFWP suspended the 2012/2013 wolverine trapping season, Montana was the only State where wolverine trapping is still legal." Legal trapping in Montana in the recent past (before 2004) removed an average of 10.5 individuals from this population each year. Since then harvest mortality has been reduced due to changes in the trapping regulations. In 2008 MTFWP adjusted its wolverine trapping regulations again to further increase the geographic control on harvest to prevent concentrated trapping in any one area, and to completely stop trapping in isolated mountain ranges where small populations are most vulnerable. The new regulations spread harvest across three geographic units (the Northern Continental Divide area, the Greater Yellowstone area, and the Bitterroot Mountains), and establish a statewide limit of 5 wolverines (USDI Fish and Wildlife Service, 2010, pg. 78050). The 2008–2009 and 2009–2010 trapping seasons resulted in four and three wolverines harvested, respectively (MFWP 2010, pp. 8-11)." The USFWS concluded that, "in the absence of other threats, trapping would not be likely to threaten State-wide wolverine populations in Montana, or to threaten the continued existence of the wolverine population in the contiguous United States...[and] the additive mortality caused by trapping could become a concern in the future as the size of the wolverine population shrinks in response to the loss of habitat due to climate change"(USDI Fish and Wildlife Service, 2010, pg. 78050).

Flammulated Owl (*Otus flammeolus*)

Flammulated owls are small insect-eating raptors with specialized habitat requirements. They are secondary cavity nesters in mature or old-growth ponderosa pine and Douglas-fir stands. Occasionally, they are found in mature aspen or cottonwood. They forage for large insects at twilight and after dark in open-grown forest formations with productive understories (tall grass, brush, young conifers) (McCallum 1994). This vegetation pattern is significant to maintaining an adequate supply of insect prey while providing the owls with perches from which to forage and a substrate for large nesting cavities. Patches of denser trees or multi-storied vegetation within or near the open stands are important for roosting (Morgan 1994). Because of the nature of their food base, flammulated owls migrate south in the winter.

Flammulated owls are unevenly distributed—a function of the spotty dispersion of suitable habitat—and numbers now substantially lower than under historic conditions. Primary threats to flammulated owls are habitat loss to logging and human settlement and the transformation of open-grown ponderosa pine stands into dense interior forest as a result of fire prevention (Morgan 1994). The scarcity of large, open-grown ponderosa pine and Douglas-fir at mid- to low elevation, limits habitat opportunities throughout the Blackfoot landscape, and as a result, the owls sometimes take advantage of less-traditional habitat formations: aspen stands or small patches of open-grown ponderosa pine adjacent to dense stands of Douglas-fir, for example.

Management strategy involves maintaining open-grown old-growth ponderosa pine and Douglas-fir forest at low and middle elevation with lightly grazed grasses and shrubs in the understory. The stands should contain a number of large snags with cavities similar to those that would support pileated woodpeckers and northern flickers (Bull et al. 1990). These conditions would not evolve naturally in the short term, and management needs to eliminate dense second-growth within these stands and burn away needle accumulations so that native grasses and shrubs can flourish and provide an environment for large insect prey (Morgan 1994). Retention of large trees, spaced fairly widely, should provide adequate perching and nesting sites for owls. Inclusions of denser tree growth are important for providing roosting habitat.

The flammulated owl is classified as a sensitive species in Region 1 because of population viability concerns—some of which stem from obvious habitat problems and some of which are a function of insufficient field information. Information about population patterns is beginning to accumulate, primarily from research on the Bitterroot and Lolo National Forests, but also from recent wide-ranging survey work throughout Region-1 National Forests [see Climburg 2006; Smucker and Climburg 2008]. Because of their diminutive size, reclusive daytime habits, and low population densities, flammulated owls are seldom seen and can normally be detected only through specialized survey methods. These efforts suggest that, in most areas, populations are small and fragmented (primarily because of the scarcity of suitable habitat).

Region-wide survey efforts, 2005-2008, have found that the HNF supports the highest flammulated owl densities of the five National Forests located east of or astride the Continental Divide—with overall densities more characteristic of the westside Forests (Lolo, Bitterroot, Nez Perce, Kootenai) (Climburg 2006; Smucker and Climburg 2008). The surveys found, however, that the most robust HNF populations were on the Lincoln Ranger District, west of the Divide. During the Oct 2008 surveys by the Avian Science Center, owls were recorded in three separate locations within the Blackfoot landscape. Table 58 shows the locations and number of detections. Potential flammulated owl habitat has been modeled– post-kill (which considers the current pine beetle epidemic throughout the forest (identified above in the *Methodologies and Assumptions* section) within the project area. The model identifies approximately 27,209 acres of potential habitat.

Table 58. Recorded locations and detections of flammulated owls within the Blackfoot landscape

Location	Number of Detections
Ogden Mountain Rd	2
Road 1163	2
Road 1830	13

The current mountain pine beetle outbreak presents habitat opportunities for flammulated owls wherever it creates large ponderosa pine snags in open forest stands away from roads. The snags provide new cavity nesting substrate, and the selective loss of live overstory trees may open up forest canopies in a manner that makes them more conducive for occupancy by the owls—allowing development of more vigorous ground vegetation and opening up understory flyways. Meanwhile, nearby Douglas-fir stands remain intact as a source of roosting habitat.

Black-backed woodpecker (*Plecotus arcticus*)

Black-backed woodpeckers are primary cavity nesters in coniferous forests. They excavate their own nest cavities in a variety of live or dead tree species and, as with many woodpeckers, play a significant role in creating holes later used by other birds and mammals (secondary cavity nesters) (Dixon and Saab 2000). Engelmann spruce, Douglas fir, lodgepole pine, ponderosa pine, and western larch are all used as nest trees. Black-backed woodpeckers forage almost exclusively on the larvae of bark beetles and wood-boring beetles that inhabit dying and newly-dead trees. Home range size varies from around 180 to 810 acres depending on habitat quality.

Black-backed woodpeckers are largely restricted to early post-fire forests (Hutto 1995), and while they can survive in other habitats in low numbers, they appear to require a regular recurrence of new burns for long-term survival (Kotliar et al. 2002). They arrive in burned-over forest within the first year following a fire and remain for up to 6 years—as long as the post-fire supply of wood-boring insects remain sufficient—but their local population usually peaks in 3-4 years (Hutto 1995). The woodpeckers are far more abundant in burned forests than in any other forest configuration. They are much less frequently observed in live mature forests, even those where snags are common.

For many decades in the 20th century, black-backed woodpecker populations were depressed by effective fire suppression, frequent salvage logging, and, to a lesser extent, by insect eradication (Hutto 1995). In the last few years, as crown fires have increased in size and intensity on the HNF and throughout the west in general (due to suppression-generated fuel build-ups), habitat opportunities for black-backed woodpeckers have been increasing.

Black-backed woodpeckers also occur in unburned landscapes where insect infestations, severe winter weather, or other phenomena have produced high densities of dead or dying trees with bark beetles and woodborer beetles. But, population density in these habitats is inevitably low with one possible explanation being that the largely black birds are less visible in fire-blackened snag aggregates (Dixon and Saab 2000) and thus less vulnerable to predation than in other snag-rich habitats. Whatever the reason, recent research focused in Montana suggests that networks of recently burned forest—not just recently dead trees—are the significant to long term survival of these birds (Hutto 1995).

Over the last 25 years, large stand-replacing fires have provided an abundance of suitable habitat for black-backed woodpeckers on the HNF. These include the Warm Springs (1988) and Boulder (2000) fires in the Elkhorn Range; the North Hills (1984), Cave Gulch (2000), Maudlow-Toston

(2000), Jimtown (2003), Meriwether (2007), and Lakeside (2010) fires in the Big Belt Range; and the EF (2012), Davis (2010), Moose-Wasson (2003) and Snow-Talon (2003) fires in the Blackfoot landscape. These fires, as well as a number of smaller burns, have accounted for hundreds of thousands of acres of burned forest in this landscape.

Other than the 1988 Canyon Creek fire that burned over 250,000 acres, the Blackfoot landscape normally has not experienced fires of this magnitude since the early 20th century, and thus has not provided viable habitat for resident black-backed woodpecker populations. The 2012 EF, 2010 Davis, 2003 Moose-Wasson and Snow-Talon fires are the only recent “large” fires that are providing some habitat. The current bark beetle outbreak is rapidly expanding habitat opportunities for a number of the more versatile woodpeckers, such as hairy and downy woodpeckers, red-naped sapsuckers, northern flickers, and even pileated and northern three-toed woodpeckers. Regionally there are several thousand acres of recently burned forest providing habitat for black-backed woodpeckers.

Western toad (*Bufo boreas*)

The Western toad (*Bufo boreas*) is widely distributed in the Rocky Mountains and the Pacific Northwest. The Montana subspecies is the “boreal toad” (*Bufo boreas boreas*)—a name often applied to it in this area. Western toads are found most often in mountainous terrain—up to 9,220 ft. They are capable of breeding in shallower reaches of any clean standing water ranging from roadside ditches and gravel pits, to temporary ponds, or large lakes (Werner et al. 2004). Eggs are laid in May or June (depending on elevation), and tadpoles and young toads are present in and around aquatic sites through the summer. Recent research in western Montana (Schmetterling and Young 2008) suggests that the toads may also make use of calm pockets of water in mountain streams for breeding.

Adults are largely terrestrial and, outside of breeding season, may wander considerable distances from their aquatic breeding sites. Females generally range farther from water than do males (Werner et al. 2004). Both juvenile and adult toads have been documented using small, fast-flowing streams as movement corridors as well (Schmetterling and Young 2008). Western toads occupy a variety of terrestrial habitats from valley bottoms to high elevation slopes—including both forested and non-forested sites. The quality of ground-level microhabitat is more important than large-scale vegetation structure. When not feeding, toads may seek cover in rodent burrows or under logs.

Western toads, once relatively common, have declined dramatically throughout Montana—and most of the West—over the last 25 years (Reichel 1996). Some decimating factors are local: draining and alteration of aquatic habitat, proliferation of cattle in breeding sites, pollution of aquatic habitat, introduction of predatory fish, fragmentation of upland habitats and travel routes. Others are probably continental or global—most prominently, the proliferation of lethal chytrid fungus. The most likely scenario is that the fungus is the primary source of mortality while local human-generated activities are acting as contributing factors (Bartelt et al. 2004).

Western toads have been identified at a number of breeding sites across the Blackfoot landscape. Occasionally they are observed in upland habitats, but their relatively low densities in these areas and their tendency to burrow under cover (in logs, under litter, in dense vegetation) make them difficult to discover. Population numbers are unknown, but it is assumed, given region-wide trends, that their numbers are lower than they have been historically.

Management Indicator Species

Elk (*Cervus elaphus*) – Hunted Species Group

A variety of big game species occur throughout or in the vicinity of the project area. These include elk, mule deer, mountain goats, mountain lions, black bears, and moose. This analysis focuses on elk as a commonly hunted species subject to effects from Forest Plan management actions.

Elk are managed to achieve particular population goals. Elk are one of the more manageable species because their habitat requirements are well studied, and they respond to habitat and population management (Cooperrider 2002). Elk are very adaptable and occur in a variety of habitats ranging from high mountainous areas to highly managed forests to cold deserts (Skovlin et al. 2002). Elk used to be widespread prior to the settlement of North America. However, due to habitat alterations and exclusion from areas of human settlement, elk are now found primarily in coniferous forests (Skovlin et al. 2002).

Management for elk and elk habitat has become increasingly more complex as human activities affect habitat quality and access. It requires meeting basic elk habitat requirements and understanding the socioeconomic value of elk and the attendant public demands. Primary considerations in elk management include (Lonner 1991)

- Maintaining habitat security to minimize elk vulnerability during the hunting season
- Preserving/recovering desired elk population characteristics as determined by elk managers and distributions relative to land management
- Satisfying the growing demand for quality hunting and non-hunting experiences.

Population Status and Habitat in the Project Area

The Montana Natural Heritage database lists the global status of elk as ‘G5’ and the statewide status as ‘S5’ which are both defined as follows: “common, widespread, and abundant (although it may be rare in parts of its range). Not vulnerable in most of its range”. See http://fieldguide.mt.gov/displayClasses.aspx?Kingdom=Animalia

Elk migrate seasonally across elevation gradients. Elk extensively use the Forest during spring, summer, and fall. During the spring, elk distribution is dependent on the availability of new forage and therefore fluctuates year to year based on snow melt. During the summer, elk use the project area widely although as summer continues, higher elevations of cool, moist, areas are frequently used. Elk winter range generally occurs at lower elevations and on south facing slopes that remain relatively snow free during the winter. Along the east, west, and southern boundaries of the project area the majority of winter range occurs on private land. More limited winter range occurs along the Blackfoot valley within the project area supporting relatively low numbers of elk throughout the winter.

Methodologies have been developed that measure elk vulnerability – the relationship between elk and land management practices and the demand for elk hunting and non-hunting experiences. These methodologies generally reflect seasonal habitat needs. These different seasonal habitat needs are the focus of the affected environment discussion and include summer range, security habitat during the hunting season, and winter range. The project area is located within eight elk herd units (EHUs): Arrastra Creek, Beaver Creek, Keep Cool, and Landers Fork north of

Highway 200, and Flesher Pass, Nevada Creek, Ogden Mountain, and Poorman Creek south of Highway 200.

Project Support of and Contribution to State of Montana Elk Management Plan

Montana Department of Fish, Wildlife and Park management objectives for elk are implemented at the elk management unit (EMU) scale. Management activities conducted on EMUs collectively contribute to statewide elk management objectives for: elk population; elk habitat; elk recreation (hunting/viewing); access (for hunting/viewing/enjoyment); game damage (crops); and monitoring (population). Forest Service cooperative activities that can assist the State of Montana in achieving statewide elk management objectives are largely limited to those influencing public access and the management of elk habitat (cover/forage/water/space).

The Blackfoot Travel Plan project area overlaps with four elk management units (EMU) consisting of eight elk herd units (EHU) or portions thereof. Given the focus of this project is the management of non-winter public access in the Blackfoot portion of the HNF, the Decision will have direct implications on the state's objective for elk recreation (hunting/viewing/enjoyment) and indirect implications on elk habitat objectives.

The FEIS (below) discusses the relationship of roads/trails (human access) and available elk habitat and potential effects on this relationship and elk habitat beginning on page 283. The FEIS also discloses how well each alternative of the proposed Blackfoot Travel Plan provides for elk habitat by demonstrating the potential effects on hiding cover, winter range and thermal cover, summer range and calving areas, habitat effectiveness, elk vulnerability including security blocks and off-route disturbance affecting elk flight response. Briefly, when comparing the effects on these elk habitat elements (see Environmental Consequences section, p. 359), alternatives 1 and 2 are least compatible with statewide elk management objectives while alternatives 3 and 4 are most compatible because of their impacts on the elk habitat elements previously listed.

Summer Range

Long-term productivity of elk is in part based on the quality of summer range. Some research indicates that the quality of summer range is one of the more important variables in determining annual variation of herd growth. The quality of summer range is measured in terms of percent of hiding cover on summer range and habitat effectiveness which is a measurement of open road densities during the summer.

Hiding Cover

For summer range, FP Standard 3 requires maintaining a minimum of 35 percent hiding cover within a herd unit when applying the FS hiding cover definition (a timber stand which conceals 90 percent or more of a standing elk at 200 feet). The FP also recognizes the FWP definition of hiding cover (a stand of coniferous trees having a crown closure of greater than 40 percent). The corresponding requirement for Standard 3 using the FWP definition of hiding cover is to maintain a minimum of 50 percent hiding cover within a herd unit (see FP page II/18). Both definitions require a minimum 40 acres patch size. For this project, hiding cover was identified using the FWP definition. Therefore, for this analysis, Standard 3 requires maintaining a minimum of 50 percent summer range hiding cover per elk herd unit.

In addition to the forestwide standards measuring hiding cover within EHUs, a portion (28,357 acres) of the planning area is included in Management Area T3 which also requires maintenance of 35 percent hiding cover (50 percent as measured with the MFWP methodology). Analysis of the vegetative conditions within the T3 acreage in the planning area indicates that there is currently 18,436 acres of hiding cover, representing 65 percent of the T3 acreage. This complies with the Management Area T3 specific standard. Table 59 below, summarizes the amount of summer range hiding cover per EHU and whether the current condition meets Forest Plan standard 3. The total summer range acres (i.e., elk herd unit acres), hiding cover acres and percentages for each herd unit as displayed serve as the baseline for this project analysis. The figures in table 59 will vary slightly under the action alternatives as a result of any hiding cover lost to new route (road and/or trail) construction.

Table 59. Acres of hiding cover on summer range by EHU

Elk Herd Unit	Total Acres Summer Range*	FP Hiding Cover Acres	Percent FP Hiding Cover	Meets FP Standard #3
Arrastra Creek	27,738	11,540	42	No
Beaver Creek	32,406	17,683	55	Yes
Flesher Pass	91,093	39,847	44	No
Keep Cool	44,325	15,768	36	No
Landers Fork	136,516	59,695	44	No
Nevada Creek	38,824	25,029	64	Yes
Ogden Mountain	56,310	24,432	43	No
Poorman Creek	67,425	42,560	63	Yes
Total	**494,637**	**236,554**	**48**	**N/A**

* Total summer range acres represent the entire herd unit including private lands outside the project area boundary

As reflected in Table 59, using the FWP definition of hiding cover only three of the eight project area elk herd units meet the FP standard 50 percent requirement. EHUs meeting FP standard 3 include: Beaver Creek, Nevada Mountain, and Poorman Creek. Based on the total acres of summer range and hiding cover for the eight herd units combined, the percent hiding cover is 48 percent. Although the total percent hiding cover falls below the 50 percent requirement, the value is low due to the inclusion of private lands within the herd unit boundaries. The majority of private land included in the hiding cover assessment occurs outside the project area boundary and is only utilized as elk winter range, not summer range. These lands are largely dominated by native grasses or open forest conditions that do not meet the FP definition of hiding cover. Regardless of current hiding cover conditions, elk population trends and estimates demonstrate resident elk are able to utilize the Blackfoot landscape and maintain or increase their numbers supporting the intent of FP standard 3.

Supporting Science for Habitat Effectiveness and Fall Elk Security Methodologies and Calculations

The analysis for elk introduces the discussion of the relationship of open road densities, hiding cover, and security blocks (following sections). It briefly describes how, although open road densities and hiding cover are the current measurement parameters of Forest Plan big game security Standard 4a, they do not present an accurate picture of secure elk habitat. This is based on the premise that hiding cover is not synonymous with security (Lyon and Canfield 1991, Unsworth and Kuck 1991, Lyon and Christensen 1992, Christensen et al. 1993). This idea is supported by Lyon (1983) and subsequent additional studies (Wisdom et al. 2004; Proffitt et al. 2012) who demonstrated that as open road densities increase, the habitat available to elk decreases due to the amount of associated motorized disturbance. In other words, the more motorized routes, and associated use, that are present in a given area (measured in miles per square mile), the less elk feel secure in utilizing the habitat even though forage and hiding cover may be immediately available.

The categorizing of roads/routes for calculating secure elk habitat is not quite as elaborate as that for grizzly bears (also see Grizzly Bear section discussion of road definitions). Regardless of the elk security habitat parameter being calculated (i.e. habitat effectiveness, fall elk security per FP Standard 4a, or fall elk security per Hillis et al. 1991), any route (road or trail) open to motorized use (i.e. open to the public) during the application periods (summer or fall) contribute to security calculations. There is no direct consideration for other categories (e.g. restricted, closed, stored, obliterated) in these calculations. Individual roads and their status (e.g. open season) vary by the habitat parameter being measured or calculated with most calculations related to the analyses for elk and also grizzly bear. Supporting road information was documented accordingly, organized by alternative and species, and included as part of the project record at section C13 (Wildlife). More detailed discussions of these calculations for various secure elk habitat methodologies, previously mentioned, are captured in the following sections.

The importance of fall elk security and habitat effectiveness, both influenced by open motorized routes, was recognized and addressed by the U.S. Forest Service and Montana Department of Fish Wildlife and Parks Collaborative Overview and Recommendations for Elk Habitat Management on the Custer, Gallatin, Helena, and Lewis and Clark National Forests. The participants in this overview evaluated these elk habitat elements for their contribution to the management of elk and its habitat, compared current management of these two elements to current science and professional observations (experience and knowledge of how local landscapes are used by elk), and made recommendations for any changes in their measurements and application on these Forest landscapes. The findings of this collaborative group concluded: 1) that application of open road densities (miles per square mile of habitat) is a valid method in determining thpagee availability of secure elk habitat during the summer or non-hunting season period and that placement of motorized routes on the landscape can be just as important as the densities of open routes. For example, important habitat areas such as ridgelines, wet meadows, and saddles should be avoided during access planning; 2) that more emphasis should be placed on the location of open routes on the landscape and the distance open routes influence secure habitat instead of calculating open road density and hiding cover when measuring secure elk habitat during fall hunting season. The group also emphasized the importance of the size of the secure habitat polygon and the amount (%) of an analysis unit in secure habitat. These suggestions are all concepts of the “Hillis Paradigm” (Hillis et al. 1991) largely accepted as leading science in the development of security areas for elk. The group additionally recommended that secure habitat be in place for elk during the general archery season in addition to the general hunting season effectively covering the dates of 9/1 through 12/1 annually. And finally, the group suggested that fall secure habitat be better distributed throughout an analysis area, where possible, instead of being concentrated at higher elevations.

The latter recommendation (i.e. application of Hillis et al. 1991) from the collaborate group, again was based on the agreement that hiding cover does not equate to security when influenced spatially and temporally (in use) by open motorized routes. However, the group did recognize the contribution of forested cover in quantity, quality and configuration to elk security and habitat effectiveness and emphasized its assessment at the landscape level.

Some of these same discussions on elk habitat management strategies, specifically fall elk security, were captured during the project scoping and evaluation as demonstrated in emails between the Forest and MFWP (A125_121113 EmailPengerothKamps; A176_130807 EmailPengerothMFWPAmendmentDiscussions) or in meeting notes (A255_140904_MFWPMeetingNoteswithOptions3). The exchange of information in these emails and meetings assisted in the development of and consensus of fall elk security measures within the travel plan area.

Habitat Effectiveness

Elk generally avoid human disturbance and/or exhibit physiological stress when exposed to human activity (Cassirer et al. 1992). In forested landscapes, open road density is used as an easily-measured variable to assess levels of human disturbance upon elk and is calculated as elk habitat effectiveness (Christensen et al. 1993; Lyon 1983).

Habitat effectiveness (Lyon 1983) analyzes how well summer range meets the needs of elk for growth and welfare during the non-hunting season. Habitat effectiveness includes an assessment of cover, forage, water, seclusion, and special features, but is primarily related to open road density. Habitat effectiveness is determined by a curve generated by the Montana Elk-Logging study which recommends a minimum of 50 percent habitat effectiveness on elk summer range. The recommended minimum of 50 percent habitat effectiveness represents a road density of 1.75 miles per square mile.

While habitat effectiveness is not a FP standard requirement it is a valuable tool for addressing elk security during the summer period, particularly with respect to managing motorized access and comparing differences between alternatives.

Habitat effectiveness considers the open road density for roads open to motorized use between May 16 and September 1 for the eight herd units in the project area as disclosed in table 60 below. The recommended minimum value for habitat effectiveness is 50 percent (Lyon 1983). Road densities are determined across the entire herd unit including private lands and associated roads.

Table 60. Existing habitat effectiveness – summer open road density (miles/square mile)

Herd Unit	Square Miles in EHU	Miles Open Road in EHU	Miles Open Road per Square Mile	Percent Habitat Effectiveness[1]
Arrastra Creek	43.3	110.1	2.5	45%
Beaver Creek	50.6	160.8	3.2	37%
Flesher Pass	142.3	304.4	2.1	47%
Keep Cool	69.3	193.0	2.8	44%
Landers Fork	213.3	271.8	1.3	**55%**
Nevada Creek	60.7	100.6	1.7	**51%**
Ogden Mountain	88.0	289.2	3.3	36%
Poorman Creek	105.4	309.0	2.9	40%

*The percent habitat effectiveness is estimated from Lyons 1983.

As shown in table 60, under the existing condition only two of the eight herd units currently meet the 50 percent habitat effectiveness recommendation. The Landers Fork EHU has the highest relative habitat effectiveness value due to the large size of the herd unit and the fact that much of the herd unit falls within the Scapegoat Wilderness.

Elk Vulnerability during Hunting Season

Security

The following addresses Forest Plan Standard 4a. For purposes of this analysis, Standard 4a is addressed as Elk Vulnerability to avoid confusion with a later discussion regarding elk security and a proposed Forest Plan amendment to revise Big Game Standard 4a. Also refer to appendix F of the FEIS for details regarding this proposed amendment. Both Elk Vulnerability (standard 4a) and Elk Security (proposed amendment) pertain to the big game hunting season. However, under standard 4a the big game season only includes the rifle season whereas the proposed amendment would redefine the big game hunting season to include the archery season as well. Table 61 below is from page II/18 of the HFP and shows the relationship between hiding cover requirements relative to open road densities for Forest Plan Big Game standard 4(a) based on the Forest Service hiding cover definition and the MFWP hiding cover definition.

Table 61. Helena Forest Plan hiding cover/open road densities

Percent Hiding Cover		Maximum Open Road Density mi/mi^2
FS Definition [1]	MFWP Definition [2]	
56	80	2.4
49	70	1.9
42	60	1.2
35	50	0.1

[1] FS definition - a timber stand which conceals 90 percent or more of a standing elk at 200 feet
[2] MFWP definition - a stand of coniferous trees having a crown closure of greater than 40 percent

Big game vulnerability, according to standard 4a, is based on the relationship between the amount of hiding cover in an EHU and the open road density during big game rifle season (10/15 – 12/1). Hiding cover is defined (HFP p. II-18) as either a timber stand which conceals 90 percent or more of a standing elk at 200 feet, which can only be measured in the field, stand by stand; or as stands of coniferous trees having a crown closure greater than 40 percent which can be determined by aerial photo interpretation and satellite imagery. Under the Forest Plan, either method is acceptable (USDA 1986, p. II/18 and table 61 above). Open road densities include all motorized routes open during the big game rifle season, defined as October 15 through December 1, and are calculated at 100 percent the length of all public roads and 25 percent the length of private roads. This relationship was based on research that indicated roads with less use have reduced impacts to elk (Perry and Overly 1976, Witmer and deCalesta 1985, and Rowland et al. 2000).

Calculations for Standard 4a include all lands, public and private, within the respective EHU. This means that elk vulnerability as determined by this standard is also a function of road densities and timber harvest on private lands outside management control of the HNF. Elk may use habitat differently relative to hiding cover and motorized routes on private land which often has different hunting pressure levels than public land.

Table 62 below, summarizes the amount of Forest Plan hiding cover by EHU, associated open road densities during the hunting season, and whether the current conditions meet Forest Plan objectives and standards for hiding cover/open road densities. Similar to habitat effectiveness, road densities are determined across the entire herd unit including private lands and associated roads.

Table 62. Elk Vulnerability (Standard 4a) - hiding cover relative to open road density

Elk Herd Unit	Total Square Miles	Acres FP Hiding Cover	Percent FP Hiding Cover	Miles Open Road during Hunting Season	Open Road Density During Hunting Season	Meets Forest Plan Standard #4a
Arrastra Creek	43.3	11,540	42%	40.6	0.9	No
Beaver Creek	50.6	17,683	55%	72.8	1.4	No

Elk Herd Unit	Total Square Miles	Acres FP Hiding Cover	Percent FP Hiding Cover	Miles Open Road during Hunting Season	Open Road Density During Hunting Season	Meets Forest Plan Standard #4a
Flesher Pass	142.3	39,847	44%	132.3	0.9	No
Keep Cool	69.3	15,768	36%	87.1	1.3	No
Landers Fork	213.3	59,695	44%	96.2	0.5	No
Nevada Creek	60.7	25,029	64%	57.0	0.9	Yes
Ogden Mountain	88.0	24,432	43%	103.6	1.2	No
Poorman Creek	105.4	42,560	63%	145.9	1.4	Yes

As shown in table 62, under the existing condition only Nevada Creek and Poorman Creek EHUs meet Forest Plan Standard 4(a). The Beaver creek EHU has greater than 50 percent hiding cover but does not meet the road density portion of the hiding cover to open road density ratio. Five of the eight herd units do not meet the 50 percent hiding cover requirement. Because of this, even if all roads within those herd units were closed to motorized use, the low hiding cover values will preclude these EHUs from meeting FP standard 4(a). Since hiding cover will change only negligibly under the action alternatives, a Forest Plan amendment (appendix A) is being recommended to adopt a different habitat security standard based on collaborative discussions with MFWP and public input to address elk security during hunting season.

The relationship between open road densities and hiding cover serves as the basis for Forest Plan standard 4a. While this relationship is important, it does not take into account the spatial arrangement and size of unroaded patches, weather-driven road access, or forage condition during any given autumn—and it is not necessarily an accurate indicator of elk security during the hunting season. Conversely, stands that may not meet the definition of hiding cover may well prove to be secure areas for elk, given local conditions of topography, remoteness, and vegetation structure (such as heavy downfall) that make hunter access difficult. Therefore, hiding cover is not synonymous with security (Lyon and Canfield 1991; Lyon and Christensen 1992; Christensen et al. 1993).

In the past, high hunter numbers, high road densities, and reduced hiding cover across the West have resulted in rapid bull harvests and substantially reduced hunter opportunities (Lonner and Cada 1982). Hillis et al. (1991) concluded that maintaining greater than 30 percent of each herd unit as security areas at least 0.5 miles from open roads (areas where elk can evade hunters), would slow the elk harvest rate and increase the probability that some bulls would be available for harvest even late in the season. Hillis et al. (1991) acknowledged that their model was most applicable on densely-forested, steep topography on the Lolo and Deerlodge National Forests, and might be less applicable on more open forests east of the Continental Divide. Christensen et al. (1993) conclude that “as you move east…over the Continental Divide, cover considerations (regarding elk security) become more important because cover is less abundant and less contiguous.” Christensen et al. (1993) further conclude that roads more than any other factor affect hunting opportunity suggesting the Hillis et al. (1991) model might be conservative. Burcham et al. (1999) concluded that where posted private lands occur within the herd unit, many elk may move to private land during the hunting season in spite of there being large blocks of security on public lands.

To better address elk security needs during the hunting season, the Helena National Forest is proposing a programmatic Forest Plan Big Game Security Amendment to replace the current big game standard 4a with a revised standard better designed to address the concerns expressed above. The objective – “to maintain or improve big game security” – remains the same as under the existing standard. The proposed new standard is fully described in chapter 2 and appendix F.

Elk Winter Range and Thermal Cover

Winter range is an important element of elk habitat. Areas with minimal human activities and adequate forage would reduce the energetic costs associated with overwinter survival. During the winter, snow and cold temperatures push elk onto low elevation habitats, predominantly southern aspects. Elk have a strong fidelity to a given winter range with most cows returning year after year to the same general area.

Quality winter range within the project area is very limited supporting relatively small numbers of wintering elk. Much of the summer elk population within the project area moves to private lands outside the project area or utilizes lower elevation FS lands adjacent to private lands. Some of the summer elk population from Arrastra creek, Beaver Creek, Keep Cool, Flesher Pass, and Poorman Creek EHUs overwinter in the Blackfoot Valley. The Landers Fork population predominantly winters on the eastern front outside the project area. The Nevada Creek and Odgen Mountain populations winter on the western edge of the project area with the majority of available forage occurring on private lands.

Thermal cover as defined in the FP is very limited in both abundance and distribution within the project area. Recent research indicates that classic thermal cover (conifer stands more than 40 feet tall with canopy closure of at least 70 percent) is probably of little value to wintering elk except in extreme conditions (Cook et al. 1998, p. 41-48). This is due to the fact that elk are better able to maintain body condition by taking advantage of solar radiation in open habitats. In addition, recent studies on Montana winter range indicate that, when in forest habitats, elk prefer stands with more open or patchy canopies capable of supporting suitable forested forage (Thompson et al. 2005). Forage in dense thermal cover stands is usually too sparse to sustain elk during severe winter conditions. Definitions for elk thermal cover (Thomas 1979) are based upon what elk were assumed to prefer in the mid-1970s in northeast Oregon. Unfortunately, in droughty, interior forests, the Forest Plan definition of thermal cover (greater than or equal to 70 percent crown closure) generally exceeds what the sites are capable of growing or what can be sustained over time given inevitable, natural disturbances. In addition, the recent mountain pine beetle infestation has substantially reduced elk thermal cover throughout the project area and across the Forest.

Forest Plan Direction

Standard 3 (Summer Range and Hiding Cover)

Forest Plan Standard 3 states the elk summer range will be maintained at 35 percent (50 percent if canopy cover is used to identify hiding cover) or greater hiding cover. Hiding cover is below Forest Plan Standard 3 in five of the eight herd units. Consequently, the existing condition is below the Standard 3 threshold. Regardless, MFWP elk population trends and estimates demonstrate resident elk are successfully utilizing the Blackfoot landscape and maintaining or increasing their numbers in associated elk hunting districts supporting the intent of this standard.

Standard 3 (Winter Range Thermal Cover)

Forest Plan Standard 3 requires 25 percent thermal cover within each EHU. Thermal cover is defined as a vegetated stand with 70 percent canopy cover. None of the elk herd units within the project area meet the thermal cover requirement. This is due in part to the loss of canopy cover due to the MPB outbreak. Again, regardless of this cover condition, resident elk are successfully utilizing the Blackfoot landscape and maintaining or increasing their numbers in associated elk hunting districts supporting the intent of this standard.

Standard 4a

Forest Plan Standard 4a limits the hunting season open road density based upon the existing percentage of hiding cover. The existing hunting season open road densities are only met in two of the eight herd units relative to available hiding cover. Consequently, the existing condition does not comply with standard 4a. Under the proposed amendment, standard 4a would be revised to create a new security standard. This revision would establish identifiable security areas instead of prescribing density requirements. The amount of security habitat in each herd unit under the existing condition is shown in table 62 above.

Standard 4c

All winter range areas will be closed to vehicles between December 1 and May 15. Exceptions (i.e., access through winter range to facilitate land management or public use activities on other lands) may be granted. Under the existing condition motorized use is only allowed on designated routes through identified winter range. The existing condition complies with the standard.

Management Area T3 Standard

The Forest Plan requires that National Forest System lands within management area T3 are required to maintain a minimum of 35 percent hiding cover for big game. Within the T3 portion of the planning area, there is 65 percent hiding cover, meeting the required minimum in compliance with the standard.

Elk Population Information

Elk occurred across much of North America prior to European settlement. By the early 1800s, market, and hide hunting almost eliminated elk east of the Mississippi River. By 1910, there were fewer than 50,000 elk in North America. As a result of management, elk increased across the west and in Montana. Statewide post-season elk numbers increased from 8,000 in 1922 to 55,000 in 1978 to about 160,000 in 2005 (MFWP 2004, pp. 4-5). Figure 2 Figure 3 and Figure 4 (below) illustrate the distribution and expansion of elk in Montana for 1940, 1970 and 1999.

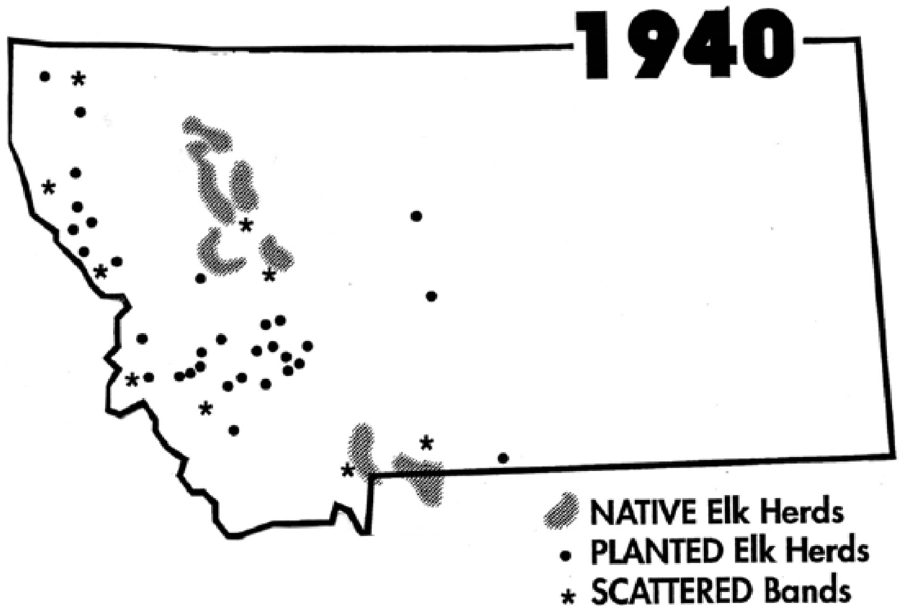

Figure 2. Elk distribution in 1940

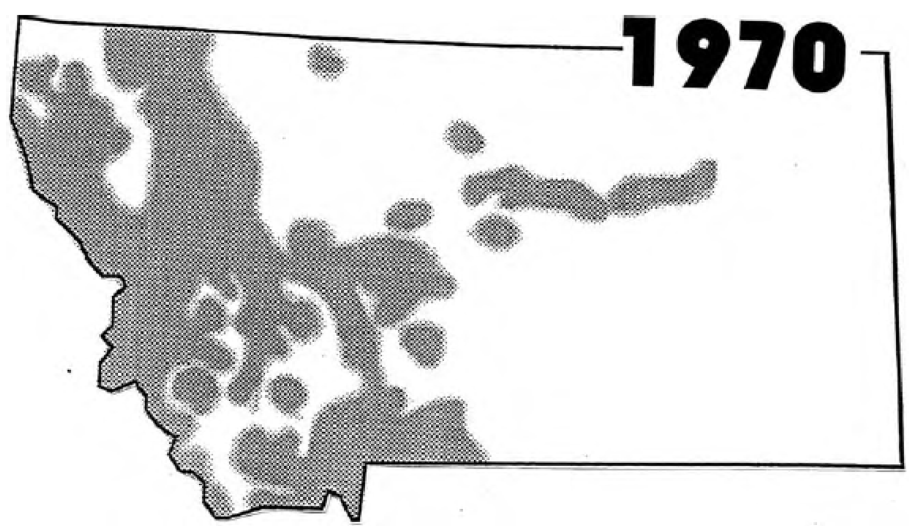

Figure 3. Elk distribution in 1970

Figure 4. Elk distribution in 1999

Today, the reestablishment of wolves combined with the predation effects of grizzlies, black bears, and lions in Montana; habitat changes; and hunting have all affected elk distribution and in some places elk numbers are declining.

The State of Montana manages elk populations on an Elk Management Unit (EMU) basis and establishes elk harvest regulations on a hunting district (HD) basis, which are sub-divisions of Elk Management Units (MFWP 2004). Hunting districts are further sub-divided into EHUs, which are the units used by the HNF to analyze security under Standard 4(a) (USDA 1986, p. II/18). Depending upon location, EHUs contain varying amounts of National Forest System land, which complicates elk security analyses for National Forest projects and limits the amount of influence management on National Forest System lands can actually have on overall elk management within an individual EHU and/or larger management unit. Elk may use habitat on private land differently where hunting pressure can be much different than that found on public land.

The Blackfoot planning area includes four elk management units and their respective hunting districts as defined by the Statewide Montana Elk Plan (MFWP 2004):

- Granite Butte EMU (HDs284, 293, 339 and 343)
- Bob Marshall Wilderness Complex EMU (HDs 280, 281, and 422)
- Garnet EMU (HD 298)
- Birdtail Hills EMU (HD 423)

Table 63. Elk management units, hunting districts, and elk herd units within Blackfoot planning area

EMU	Hunting Districts containing NFS Land within the Planning area	Associated EHUs
Birdtail Hills	423	Flesher Pass
Bob Marshall Wilderness Complex	280	Landers Fork
	281	Arrastra Creek, Beaver Creek, Keep Cool, Landers Fork
	422	Landers Fork
Garnett	298	Ogden Mountain
Granite Butte	284	N/A – All Private Land
	293	Ogden Mountain, Nevada Creek[1], Poorman Creek[1], Flesher Pass
	339	Flesher Pass
	343	Flesher Pass

[1] Elk Herd Units currently meeting Big Game Standard 4a (2)

Table 63 above and figure 5 that follows illustrate the correlation between MFWP elk management units and HNF elk herd units within the planning area.

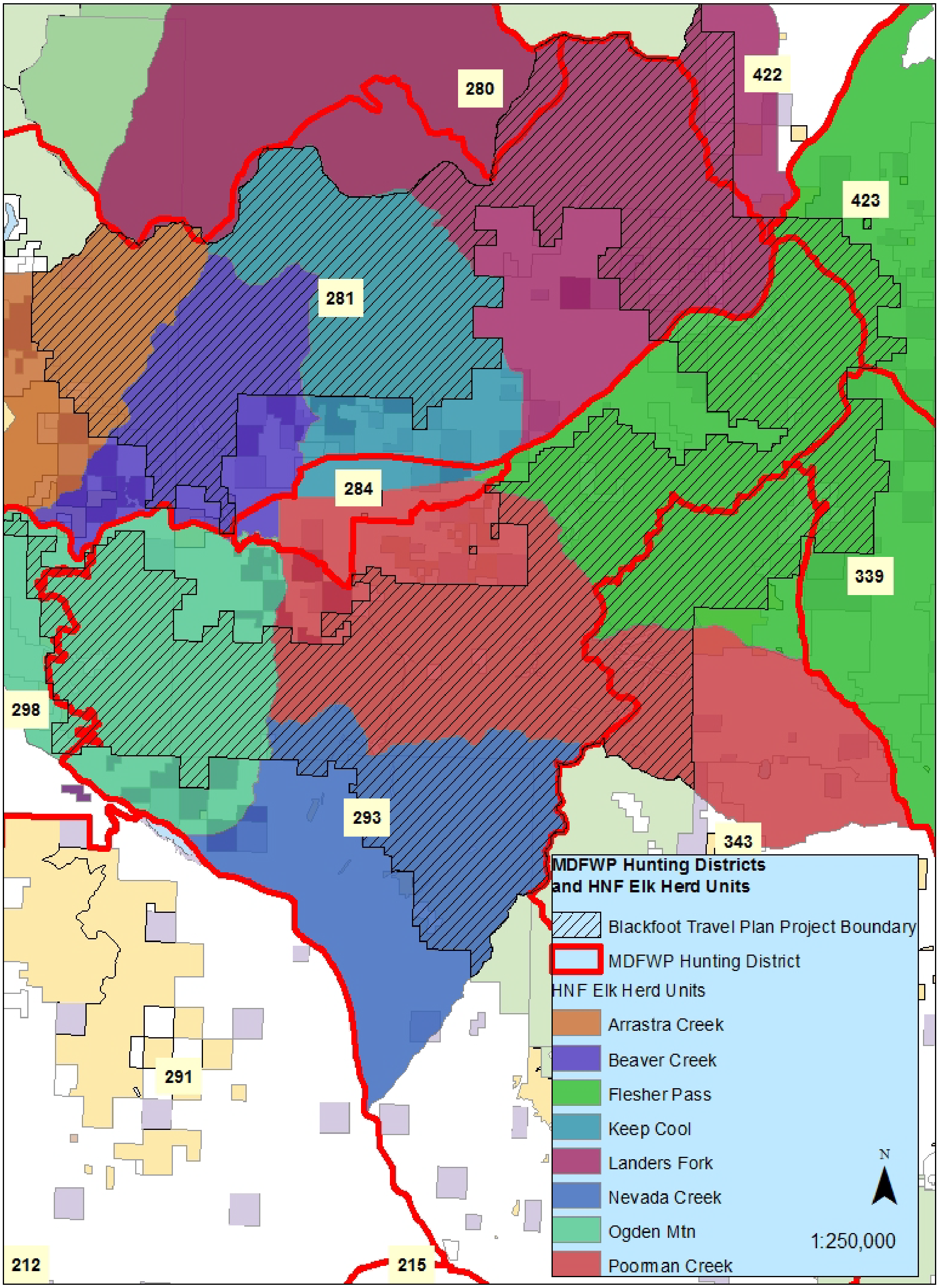

Figure 5. MFWP hunting districts and HNF elk herd units associated with the Blackfoot planning area

As shown in figure 5, the vast majority of the planning area falls within HD 281 and HD 293. North of Highway 200, planning area lands west of the divide are within HD 281 while those lands east of the divide are in HD 422. HNF lands in the Scapegoat Wilderness are within HD 280. South of Highway 200, lands west of the divide are within HD 293 while those lands east and south of the divide fall within HD 423, HD 339, and HD 343. HD 284 is an archery only zone along the Blackfoot river occurring entirely on State and private lands. Hunting Districts 281, 280, and 422 are within the Bob Marshall Wilderness Complex Elk Management Unit (EMU). Hunting Districts 284, 293, 339 and 343 are within the Granite Butte EMU. Hunting District 423 occurs within the Birdtail Hills EMU.

Since completion of the Elk Plan however, wolves have become very well established within the planning area and the combination of wolves and other predators has had a notable impact upon elk and deer populations within the planning area. The MFWP 2011 Annual wolf report (MFWP 2011d) recognized a minimum of six different wolf packs with territories overlapping the planning area. Conversely, when the Elk Plan was completed in 2004 there were no known established packs in the planning area. The rapid expansion of wolves within the planning area was largely in response to abundant elk and deer populations. The Elk Plan recognized that potential future impacts of wolves may influence future elk populations, their distribution and management (MFWP 2004 pgs. 114, 197). While information provided in the 2004 Montana Elk Management Plan may not reflect current elk population levels or trends due to the effects of increased predation, it does provide some baseline information for the respective elk EMUs and HDs as described below, prior to wolves becoming established.

Factors Influencing Elk Management

Each Elk Management Unit, and associated Hunting District(s), has its unique challenges that relate to management of elk. Although varied by Hunting District, overall challenges include the impacts of predation on elk populations, the amount of public land in the Unit, the level of restricted hunting access on private land, and extent of motorized use. Refer to the Montana Elk Plan (MFWP 2004) for more information. There are also inherent differences in habitat amongst EMUs.

Table 64 provides information relative to MFWP population objectives in a majority of the Hunting Districts overlapping the Blackfoot Non-winter Travel Plan Area. There are nine hunting districts that overlap with the Plan area although HDs 298, 422 and 423 only contain minor amounts of National Forest System lands within the planning area. HD 284 is entirely off of the Forest and is not included in the table.

Table 64. MFWP population objectives and recent trend data in hunting districts that overlap with the Helena National Forest

Hunting District1		Population Objectives Based on Aerial Surveys Post-Harvest (MFWP 2004)	Recent Trend Data (Year of Data)	Summary
280		No specific objective; tied to 281	No specific data	Harvest objectives are based on elk numbers in adjacent hunting districts. See discussion below (HD 281) for management challenges in this HD.
281	Number of Elk	500-700 elk	452 elk (2013)	Elk numbers and bull/cow ratio below objectives. Management challenges in this HD include access, disposition of Plum Creek Timber lands, predation, and habitat conditions related to forage availability (MFWP 2004, pp. 113-115) "Many segments of the elk populations are influenced by the successional stages of vegetation in the wilderness and by roadless habitats. Much of this area is not at a successional stage of vegetation that is conducive to producing abundant forage and dense elk populations."
	Bull/ Cow Ratios	15 bulls/100 cows or 8% bulls/total elk observed	7 bulls/100 cows (2013)	
293	Number of Elk	750 elk	609 elk (2013)	Elk numbers below objectives, bull to cow ratio above objectives. Management challenges in this HD include development, access, noxious weeds, predation, and elk security in terms of cover and road densities (MFWP 2004, pp. 197-198).
	Bull/ Cow Ratios	10 bulls/100 cows	13 bulls/100 cows (2013)	
298*	Number of Elk	600 elk	1,087 elk (2013)	Elk numbers above objectives. Management challenges in HD 292 include private property restricted access during the hunting season and OHV illegal use, residential development, and future disposition of Plum Creek Timber land (MFWP 2004, pp. 147-148). Management challenges in HD 293 include development, access, noxious weeds, predation, and elk security in terms of cover and road densities (MFWP 2004, pp. 197-198).
339	Number of Elk	560-840 elk	785 elk (2013)	Elk numbers meets objectives; bull/cow ratio above objectives. Management challenges in this HD include housing development, access, noxious weeds, predation, and elk security in terms of cover and road densities (MFWP 2004, pp. 197-198).
	Bull/ Cow Ratios	15 bulls/100 cows	27 bulls/100 cows (2012 as reported in 2013)	

Hunting District1		Population Objectives Based on Aerial Surveys Post-Harvest (MFWP 2004)	Recent Trend Data (Year of Data)	Summary
343	Number of Elk	560-840 elk	656 elk (2013)	Elk numbers and bull/cow ratio meets objective. Management challenges in this HD include housing development, access, noxious weeds, predation, and elk security in terms of cover and road densities (MFWP 2004, pp. 197-198).
	Bull/ Cow Ratios	10 bulls/100 cows	10 bulls/100 cows (2013 as reported in 2013)	
422	Number of Elk	450- 550 elk	1,687 elk (2012)	Elk numbers and bull/cow ratio above objectives. Management challenges in HD 422 include extremely limited hunter access to private property (MFWP 2004, p. 114).
	Bull/ Cow Ratios	5 bulls/100 cows	26 bulls/100 cows (2012)	
423	Number of Elk	400 – 600 elk (for the entire Elk Management Unit)	419 elk (2013)	Elk numbers at objective. Management challenges in this HD include lack of hunter access associated with properties either outfitted or closed to hunting have resulted in reduced levels of antlerless harvest (MFWP 2004, p. 327)
	Bull/ Cow Ratios	5 bulls/100 cows	No cows observed during aerial survey (2013)	

*HD 298 was originally included in portions of HDs 292 and 293 and became its own HD after the release of the Montana Final Elk Management Plan January 2005. The elk objectives are therefore articulated in annual aerial survey data.

Mule Deer

Due to the variety of forest and non-forest communities utilized, virtually all of the planning area provides suitable deer habitat. Like elk, effects are analyzed by looking at changes in cover, summer and winter forage availability, displacement, and hunting vulnerability. For the purpose of this analysis, available mule deer cover is expected to be similar to that described for elk.

Suitable habitat and use is widespread. In Montana the average deer home range is less than 500 acres (Riley and Dodd 1984), and the planning area contains summer, winter and transition range. Direct, indirect and cumulative effects are evaluated across the planning area.

Species Status and Biology

In Montana mule deer are ranked as S5 indicating they are common, widespread and abundant. Although they may be rare in parts of their range, mule deer are not considered vulnerable (MNHP 2011).

Mule deer are habitat generalists, mobile, adaptive and wide ranging. As a result they use a wide variety of habitats from open to dense montane and subalpine coniferous forests, aspen, shrub communities and brushy areas. In summer they are widely distributed in forest and subalpine habitats, and in winter use lower-elevation, open, shrub-dominated areas (MNHP 2011). Within woody vegetation types, mule deer use all seral stages and do best in areas where there is a mix of seral communities.

Food habitats vary seasonally and by year. Preferred forage species include bitterbrush, mountain mahogany, chokecherry, serviceberry, grasses and forbs. Forbs are most important in summer, whereas shrubs are used year-round but are important in fall, winter and spring (MNHP 2011). Competition with elk can be significant because elk have a more varied diet and on shared range, mule deer are most often negatively impacted (MNHP 2011; Frisina et al. 2006).

Optimum deer habitat contain a mixture of forage and cover habitat that is well interspersed and generally, a mixture of 40 percent cover and 60 percent forage is considered optimum (Thomas 1979; Knight 2011). Available cover should include a combination of hiding, thermal and fawn rearing cover. Because deer cover and forage requirements are very similar to elk, the discussion of preferred hiding cover and forage for elk, would also apply to mule deer. Since deer are smaller, the height and density of vegetation suitable for cover (hiding and thermal) would be less than that required by elk (Thomas 1979). Also like elk, deer require water (particularly on summer range) (Julander 1966 in Thomas 1979) and optimum habitat occurs within approximately 0.5 mile of water (Mackie 1970 in Thomas 1979). Consequently riparian areas can be particularly important.

Fawning habitat for mule deer consists of foraging areas with hiding and thermal cover, and is typically on spring transition range with gentle slopes with abundant succulent vegetation within 600 feet of water. While many habitats are used for fawning and rearing fawns, those providing relatively large quantities of herbaceous vegetation are most important.

While deer numbers and herd health are affected by a number of factors, forage is often most limiting on carrying capacity (Knight 2011), particularly on winter range. Equally important to forage quantity is forage quality and reproduction and animal condition is best maintained if high quality (i.e., nutritious and palatable) forage is available. As a result, a combination of herbaceous and woody vegetation needs to be available.

Mule deer occupy nearly all habitats within the project area at nearly all elevations during summer and fall, although they are most abundant where large quantities of nutritious forage is available. Transition range is found at the lower elevations of the summer range and contains abundant grass and forbs, intermixed with the shrub and aspen communities.

Marten (*Martes americana*) - Mature Forest Dependent Species Group

While the *Helena Forest Plan* uses the American marten as an indicator for the integrity of large blocks of mature forest cover in general, marten appear to be dependent primarily on mature forests with a relative abundance of large woody debris and an adequate distribution of standing snags. While marten will travel through forest habitats with “clean” understories, they need logs, stumps and snags for resting, denning, protection from the elements, and prey habitat. This is particularly important in winter, when marten live in a subnivean (under-snow) environment where woody debris provide needed structure and shelter (Thompson and Colgan 1994; Coffin et al. 2002). The upshot is that research now indicates marten are not an accurate management indicator for all mature forests. Chapin et al. (1997) found that vertical and horizontal structure was more important than age or species composition.

Marten population densities and trends are notoriously difficult to evaluate: long-term data sets are rare, and populations often fluctuate dramatically over short periods of time, in large part because of variable trapping pressure. Where reasonably accurate data have been obtained, population densities have been very low compared to most other mammals—generally in the range of 0.4 to 2.4 marten per km^2 (Buskirk and Ruggeiro 1994). Marten home ranges are large by mammalian standards, although they tend to be smaller in areas of high prey density (Buskirk and Ruggiero 1994) and larger in areas of fragmented habitat (Coffin et al. 2002).

Fragmentation of coniferous cover by logging has reduced habitat suitability. Marten appear sensitive to patch size and usually avoid clearcuts because these areas don’t provide functional subnivean zones or offer protection from predators—although they will cross (as quickly as possible) open areas up to 91 meters wide. Thompson (1994) concluded that higher marten densities in unlogged forests might be due to lower predation rates.

Marten are found throughout the Blackfoot landscape wherever suitable habitat occurs—primarily in mid-high elevation forests with a strong component of subalpine fir, Engelmann spruce, and lodgepole pine with pockets of coarse woody debris. Marten are rare in lower elevation ponderosa pine and dry Douglas-fir forests (Buskirk and Ruggiero 1994), although these habitats sometimes provide linkage between forests suitable for long-term occupancy.

Potential marten habitat has been modeled– post-kill (which considers the current pine beetle epidemic throughout the forest (identified above in the *Methodologies and Assumptions* section) within the project area. The model identifies approximately 63,104 acres of potential marten habitat and is composed of an infinite number of small polygons creating a virtually contiguous habitat across the Blackfoot landscape, enabling martens to roam between these linkage habitats across the landscape.

The current pine beetle epidemic is changing potential habitat patterns for marten in the Blackfoot landscape wherever lodgepole pine is a predominant component. The bounty of large snags and logs is highly beneficial to marten but the natural thinning, and in some cases, outright loss of the forest canopy as trees fall creates a less favorable environment for them. The proliferation of dead trees in ponderosa pine stands is of much less importance to marten since they seldom inhabit these relatively dry lower elevation forests.

The presence of marten have been confirmed within various locations throughout the Blackfoot landscape from past winter tracking surveys by MFWP, past tracking records, recent tracking surveys in the project area by Wild Things Unlimited beginning in 2009 and Forest Service surveys. Winter hair snare DNA surveys were conducted by Forest Service personnel in 2011 and 2012, which also confirmed the presence of marten within the project area. These observations are insufficient to derive population parameters but they give a general picture of marten distribution and habitat use and show that marten population densities are stable throughout much of the landscape.

MFWP, relying on trapping data and snowcourse surveys, allows trapping in the Blackfoot landscape (which is split by Trapping District 4, east of the Divide and District 2 on the west side. There are no harvest quotas set for marten in Montana, the statewide marten harvest continues to remain relatively stable (MFWP 2009c) and trapping pressure is usually driven by fur prices. In Lewis-and-Clark and Powell counties, which cover the Blackfoot landscape (along with portions of the Lewis-and-Clark and Beaverhead-Deerlodge NFs), trapping pressure in recent years has been relatively light and few marten have been caught. Since 1996, an average of 5.2 marten per year has been reported trapped in Powell County (range: 0-19 animals). None were reported from Lewis and Clark County. MFWP has recorded an average of 3 trappers taking marten in these areas since 1996.

Northern goshawk (*Accipiter gentilis*) – Old-growth Dependent Group

Goshawks are the only large diurnal raptors adapted to interior forest environments in the northern Rockies. Significant elements of goshawk habitat are extensive blocks of older forest with tight groups of mature nesting trees, abundant prey (squirrels, hares, larger songbirds, grouse), and mid-level flyways. In the northern Rockies, *optimal* habitat for goshawks is provided by old-growth Douglas-fir and ponderosa pine forest—and for that reason; the species was chosen as a management indicator for those habitats in the *Helena Forest Plan*. Since the early 1980s, prodigious field research and survey work have demonstrated that goshawks are considerably more versatile in their use of habitat than was believed at the time. Goshawks have specific requirements for nesting and post-fledging habitat (closed-canopied mature forest) but otherwise have been shown to be forest generalists—and not particularly useful as Douglas-fir old-growth indicators (Braun et al. 1996; Reynolds et al. 1992; Clough 2000; McGrath et al. 2003).

Surveys over the past 15 years on the Helena, Beaverhead-Deerlodge, Lewis and Clark, and Medicine Bow National Forests have found that goshawks will nest and forage in stands of mature lodgepole pine as long as the basic structural attributes they need are in place and prey is adequate (Lemke 1994; Squires and Ruggiero 1996; Clough 2000). In the more fragmented forest environments east of the Continental Divide where mountains and plains intermingle, goshawks often occupy mosaics of forest and grassland or a mixture of different forest seral stages. They are capable of foraging through open parks and woodlands and along forest edges (Younk and Bechard 1994). But regardless of the structural diversity of foraging habitat and of goshawk ranges in general, nesting and post-fledging habitat inevitably requires solid blocks of mature interior forest.

Extensive survey work over the past 15 years has demonstrated that goshawks are widespread across the Helena National Forest. They maintain large home ranges (estimated at 5,820 acres per pair) (Reynolds et al. 1992; Clough 2000), and population densities are naturally low, even where appropriate habitat is abundant. In areas with high prey populations and optimal habitat structure, home ranges may be smaller or overlap. The optimal size of a goshawk nesting stand is estimated to be about 15-30 acres; optimal post-fledging areas (PFAs) are about 620 acres (and contain several potential nest stands). Nest stands and substantial portions of PFAs need to be densely forested with mature trees in order to provide effective nesting sites, suitable microclimate, abundant prey, and security from open-forest predators. The remainder of the home range consists of foraging habitat and inclusions of unsuitable habitat. Foraging habitat, while dominated by mature forest, often includes a variety of tree densities and age classes along with forest openings (Reynolds et al. 1992). Goshawks can make use of these environments as long as prey is adequate.

Loss of habitat to clearcut logging and stand-replacing fire are the primary threats. Goshawks are sensitive to human disturbance of nest sites and can be very aggressive in defending the nest and the larger area within which newly fledged young are operating (post-fledging area) (personal observation). They may occupy the same nest stand in consecutive years but rarely the same nest (although they may return to an old nest 2 or 3 years later). Just as often, they move to a new stand elsewhere in the home range. Because of their large home ranges and their natural tendency to cycle among different nest sites between years, they are able to adapt too many environmental changes (such as fire and timber harvest) by moving to adjacent undisturbed sites.

In spite of the fact that goshawks maintain naturally low population densities (active nests on the HNF are typically 2-3 miles apart), they are fortuitously observed and reported on a regular basis across the Blackfoot landscape each year. The Blackfoot landscape currently contains 7 active goshawk nests. The HNF has actively surveyed for goshawks each year since 1995. Because of the rarity of stand-replacing fire in recent decades, the Blackfoot travel planning area has been dominated by mature forests that provide widespread opportunities for goshawk occupancy. Potential goshawk habitat has been modeled– post-kill (which considers the current pine beetle epidemic throughout the forest (identified above in the *Methodologies and Assumptions* section) within the project area. The model identifies approximately 61,291 acres of potential goshawk nesting habitat, potential foraging habitat of 116,994 acres within the project area.

The character of much of this habitat is changing as large numbers of lodgepole and ponderosa pine trees die and forest canopies open up as a result of ongoing bark beetle infestation. In the short term, this phenomenon is likely to improve goshawk foraging opportunity, but eventually it would measurably reduce the suitability of numerous nesting stands, as well as foraging habitat.

Pileated woodpecker (*Dryocpus pileatus*) – Old-growth Dependent Group

The pileated woodpecker serves as an indicator of the health and availability of old-growth forests because of its need to nest in large diameter snags that occur most frequently in old-growth stands (Bull and Holthausen 1993). As well, it is often described as a “significant species” because of the disproportionate effect it has on its environment, in spite of its inevitably low population density. Pileated woodpeckers create numerous large excavations in dead trees that are then used by a variety of secondary cavity dwellers; they enlarge cavities in living trees providing unique habitat for other species; they hasten the decay process in the live trees they excavate and in the logs they break apart while foraging (Bull and Jackson 1995). This “ecosystem engineering” alters the physical structure of the environment in ways that influence habitat opportunity for other species and general ecosystem processes (Aubry and Raley 2002).

In the Northern Rockies, pileated woodpeckers tend to use mature cottonwood bottoms, mixed conifer, ponderosa pine, among other habitat types (Hutto 1995). Forests with a component of western larch, ponderosa pine, or black cottonwood are also used in the northern Rocky Mountains (McClelland and McClelland 1999).

For nesting and roosting, pileated woodpeckers require large, standing dead trees —typically greater than 30 inches diameter breast height (d.b.h.). They have a strong preference for ponderosa pine and western larch as nest trees. Foraging sites are provided by standing trees (dead and alive) and by large logs and stumps, where the woodpeckers feed on a variety of wood-boring insects, preferably carpenter ants (Bull 1987; Bull et al. 1997). The pileated woodpecker is powerful enough to excavate deep foraging cavities in living conifers (Bull and Jackson 1995), which opens up a wider range of feeding possibilities than is immediately available to other local woodpeckers.

Pileated woodpeckers are very mobile and are considered a large-patch-size species. Their home ranges are extensive and require a generous percentage of unlogged or partially logged forest with a reasonable distribution of large trees. The average size of 27 home ranges (sometimes referred to as "territories") in good quality habitat in the Pacific Northwest has been calculated at 1,234 acres (just under 2 mi^2) (Bull and Holthausen 1993; Mellen et al. 1992). This translates to relatively low population density even in optimal habitat. Pileated woodpeckers have seldom been studied in more marginal habitats that characterize much of the east slope of the northern Rockies in Montana, but field observation suggests that population densities are appreciably lower in these environments.

Potential pileated woodpecker habitat has been modeled– post-kill (which considers the current pine beetle epidemic throughout the forest (identified above in the *Methodologies and Assumptions* section) within the project area. The model identifies approximately 65,728 acres of potential habitat.

Hairy woodpecker (*Picoides villosus*) – Snag Dependent Species Group

The hairy woodpecker is a management indicator for species dependent on snags. Snags provide the essential substrate for excavating cavity nests and the primary food source in the form of wood-boring and bark-dwelling insects. Hairy woodpeckers inhabit a wide spectrum of habitats ranging from open snag fields created by stand replacing fire to interior forests with a smattering of snags and other insect-prone trees (Hutto and Young 1999). Hairy woodpeckers are year-round residents in the northern Rockies and primary cavity nesters. The cavities that they excavate are eventually available to a myriad of other small birds and mammals.

Woodpeckers require dead or decaying trees at least 10 inches in diameter for nesting (Thomas et al. 1979), but they may forage on smaller trees. They feed on insects—wood borers, bark beetles, ants, and grubs—as well as on fruits, berries, and sometimes, seeds. These resources are gleaned from variety of substrates: dead and dying trees, live trees, logs, stumps, and the ground—anything with a supply of appropriate insects or other suitable food.

The primary habitat component on which hairy woodpeckers depend is ephemeral—more so than significant habitat features required by most non cavity-dependent species. While fire killed trees may remain standing for up to several decades and continue to supply a potential base for nest cavities, their ability to support the insects on which the woodpeckers depend for food deteriorates quickly (typically, within 5-8 years). Trees killed by insects or disease may remain upright for only 2-3 years after becoming suitable for cavity excavation. As the supply of dead trees waxes and wanes in a given area, the hairy woodpecker population follows.

The woodpeckers reach their highest population densities in new burns and areas of insect outbreaks, responding to the increased food source (Sousa 1987). In these cases, they may be the most common woodpecker present. As the abundance of wood-boring insects in a burned-over area begins to decline, the population density of hairy woodpeckers also drops and home ranges expand. Given the range of habitats and food supplies that hairy woodpeckers are capable of exploiting, their population densities and their home range sizes can vary dramatically. Typical home ranges run from around 2.5 mi^2 to more than 37 mi^2 depending on habitat quality and food abundance. Hairy woodpeckers can be found with regularity in any forest habitat with a modicum of dead trees for nesting and enough insect-prone trees to provide feeding substrate (Hutto and Young 1999).

Potential hairy woodpecker habitat has been modeled– post-kill (which considers the current pine beetle epidemic throughout the forest (identified above in the *Methodologies and Assumptions* section) within the project area. The model identifies approximately 65,797 acres of potential habitat.

We have no population density estimates for hairy woodpeckers in the Blackfoot travel planning area. But, past wildlife surveys by HNF biologists and numerous point-count surveys by the Northern Region Landbird Survey Program over the past 15 years indicate that the hairy woodpecker is common in the Blackfoot landscape and on the HNF as a whole.

With the ongoing proliferation of beetle-killed pine trees over several hundred thousand acres across the HNF, nesting and foraging opportunities for hairy woodpeckers and other cavity dependent species are now increasing dramatically, and their populations can be expected to do likewise over the next few years.

Species of Concern

Mountain Goat (*Oreamnos americanus*)

There is no special status designation for the mountain goat. In Montana, it is a hunted species throughout much of its range by draw permit only, regulated by MFWP. Currently there are no hunting permits issued for the mountain goat population within the project area. One designated mountain goat hunting district (HD 280) overlaps a portion of the project area however no permits have been issued for HD 280 for the past several years. HD 280 lies predominantly within the Scapegoat Wilderness although it does extend to Highway 200 along the continental divide.

The mountain goat was originally distributed from southern Alaska through the Yukon and Northwest Territories and British Columbia and Alberta, reaching southern Oregon, western Montana and southern Idaho. Since the 1930s individuals have been introduced into additional mountain ranges in Oregon, Montana, Washington, Wyoming, Utah, Nevada, South Dakota, Colorado, Texas, and the Olympic Peninsula of Washington (Foresman 2001). In Montana, reintroduction efforts have brought mountain goats into many isolated mountain ranges in western and central Montana where historically none lived (Mussehl and Howell, 1971, as cited in Foresman 2012).

Mountain goats occupy mountainous terrain; typically the highest rockiest, and most rugged peaks where talus slopes and sheer cliffs predominate. In parts of their range mountain goats occur at elevations exceeding 13,000 feet. Although they sometimes descend to sea level in coastal areas, they are primarily an alpine and subalpine species. Mountain goats typically stay above tree line throughout the year but will migrate seasonally to higher or lower elevations within their range. During spring and summer when mountain goats require additional sodium in their diets, they will occasionally travel several miles through forested areas in search of mineral licks.

Movement Patterns

Daily movements by individual mountain goats are primarily confined to areas on the same mountain face, drainage basin, or alpine opening. Daily movements reflect an individual's needs for foraging, resting, thermoregulation and security from predators or disturbance. Seasonal movements primarily reflect nutritional needs (e.g., movements to and from mineral or salt licks), reproductive needs (i.e., movement of pre-parturient females to "kidding" areas; movement to rutting areas), and climatic influences (i.e., movement to areas in response to foraging conditions). In general, seasonal movements are likely to exhibit a strong elevation component, whereby lower, forested elevations are used during the spring-summer to access lower elevation mineral licks, and higher elevation steep windblown slopes are used during winter to access forage. The farthest movements are expected to be by dispersing mountain goats. Such movements are likely to involve mountain goats crossing forested valleys as they move between mountain blocks.

Home ranges of mountain goats vary dependent upon habitat quality and seasonal forage availability. Annual home range sizes are similar for both sexes varying from roughly 4 to 15 square miles across different mountain ranges in Montana (Foresman 2012). Based upon FWP aerial survey locations of collared goats from 2002-2006, goats within this population appeared to be utilizing approximately a 13 sq. mile area during this time.

Diet

Mountain goats are herbivores and spend most of their time grazing. Diet varies seasonally, and by site, based upon availability. Their diet includes grasses, herbs, sedges, ferns, moss, lichen, twigs and leaves from the low-growing shrubs and conifers of their high-altitude habitat.

Foraging patterns vary among different mountain goat populations with some populations primarily foraging in early to mid-morning and toward evening along ledges and among rock outcrops, as conditions permit. Other populations have been observed foraging at all hours of the day, at intervals of 1.5-3 hours and may forage into the night. During snow-free months animals forage in alpine meadows and along ridges; as snows accumulate, mountain goats retreat to steeper terrain and talus slopes where stepped ledges are blown free of snow.

Life Cycle and Mating

In the wild, mountain goats usually live twelve to fifteen years, with their lifespan limited by the wearing down of their teeth.

Both male and female mountain goats reach sexual maturity at two years of age. Breeding in Montana occurs in late October through early December with the greatest activity occurring in November through early December. Nannies in a herd undergo synchronized estrus during the breeding season. Both males and females usually mate with multiple individuals during breeding season, although some billies try to keep other males away from certain nannies. After the breeding season is over, males and females move away from each other, with the adult billies breaking up into small bands of two or three individuals. Nannies form loose-knit nursery groups of up to 50 animals.

Kids are born in the spring (late May or early June) after a six month gestation period. Nannies give birth, usually to a single offspring. Kids weigh a little over 7 pounds at birth and begin to run and climb (or attempt to do so) within hours. Although they are mostly weaned within one month, kids follow their mothers closely for the first year of life (or until the nanny gives birth again, if this does not occur the next breeding season); nannies protect their young by leading them out of danger, standing over them when faced by predators, and positioning themselves below their kids on steep slopes to stop free falls.

During spring and summer adult males are primarily solitary, although groups of two or three occur. Adult females form larger, mixed groups including their offspring and nonrelated sub-adults although even here group sizes generally remain small. Larger groups may occur when food is limited or individuals concentrate at desired salt licks.

Population and Habitat Status

Within the project area mountain goats are only present along the southern boundary of the Scapegoat Wilderness where they are considered indigenous (FWP 2001). The general range over which goats from this population have been documented in recent years is from the Arrastra creek drainage to the west, to the Falls Creek drainage to the east. These drainages are approximately 13 air miles apart. The most consistent concentrated use occurs in the Stonewall Mountain area and the Red Mountain/Sourdough basin area based upon repeated observations.

It is believed that the former population went extinct by 1980 with excessive legal and illegal harvest suspected to be a primary contributing factor. In the summer and fall of 1989, FWP attempted to transplant 14 mountain goats at lower elevation sites outside the wilderness boundary, but the strategy proved unsuccessful. Only two mountain goats were observed in the area during a 2000 aerial survey. Data from the 1989 transplant indicates that many transplanted goats, particularly females, emigrated out of the area and never contributed to re-establishing the population (MFWP 2001).

Today the mountain goat population in the area continues to grow following reintroductions by MFWP in 2002 (ten goats) and 2005 (five goats). Unlike earlier efforts, goats were released on top of Red Mountain during the winter months while snowpack limited the potential for emigration from the area. All of the released goats were fitted with color coded collars and ear tags to assist with future identification. Three nannies from each of the two releases (six total) were also fitted with radio collars to monitor their movements.

Following the 2002 release, population monitoring was conducted through a cost share agreement between the Helena NF and MFWP along with other contributors. In 2002, on the ground summer monitoring along with aerial surveys located 9 of the 10 released goats within the study area. These surveys also confirmed one unmarked male in the study area and kids accompanied four of the transplanted females. A similar monitoring effort, both on the ground and aerial, was also conducted in 2004. This study found similar results in terms of numbers and reproduction. In 2005, five more goats were released into the population. FWP consistently used aerial surveys to monitor the population through 2006 with only occasional, infrequent aerial monitoring since. Aerial surveys consistently located collared goats in the Stonewall and Red Mountain/Sourdough areas. Aerial surveys also located collared goats in the Bighorn lake area to the northwest, Arrastra Mountain to the west, and Falls Creek to the east.

In addition to the monitoring efforts discussed above, the Stonewall lookout tower is occupied by a Forest Service employee each summer from July through September. A subgroup of the goat population consistently uses the Stonewall mountain area and annual observation reports by the lookout have noted consistent reproduction and a gradual increase in numbers. In recent years, several unmarked nannies with kids have been observed near the Stonewall lookout confirming that the population is successfully reproducing and increasing in numbers. In 2012, the permitted wilderness outfitter in the area reported seeing a group of 15 goats traveling through forested habitats toward Red Mountain in July, and in September observed a group of 24 goats including billies, nannies, and young of the year in the Sourdough drainage. Various publics have also reported seeing goats in the head of the Arrastra creek drainage, Baking Powder drainage to the east and various locations in between.

Migratory Birds

The memorandum of understanding (MOU) with the USDI Fish and Wildlife Service on the Migratory Bird Treaty Act identifies significant principles and directs the Forest Service to (1) focus on bird populations; (2) focus on habitat restoration and enhancement where actions can benefit specific ecosystems and migratory birds dependent on them; (3) recognize that actions taken to benefit some migratory bird populations may adversely affect other migratory bird populations; and (4) recognize that actions that may provide long-term benefits to migratory birds may have short-term impacts on individual birds. The parties agreed that through the NEPA process, the Forest Service would evaluate the effects of agency actions on migratory birds, focusing first on species of management concern along with their priority habitats and significant risk factors.

Migratory birds and their habitats including species with viability concern (TES) and priority species are evaluated in the habitat and species-specific sections of this report.

Environmental Consequences

Direct and Indirect Effects Common to All Species

Since 1986, the Helena National Forest has closed several miles of roads and areas Forestwide to motorized use. However, the remaining roads still present impacts to wildlife species that are sensitive to the disturbance associated with human activity along roads as well as any direct effects to their habitats. Road density standards have been developed through research and are recommended for many species. These analyses are used where appropriate and are discussed below under the respective species.

Many of the roads are located within Riparian Habitat Conservation Areas (RHCAs) that provide important biological necessities for many wildlife species. RHCAs are of varying buffer widths as defined by the Inland Native Fish Strategy (INFISH 1995). The location of these roads and user created routes reduces the habitat effectiveness of the riparian areas. Table 65 summarizes the number of total open motorized route miles and those located within RHCAs by alternative.

Table 65. Cumulative miles of open motorized routes, total and within RHCAS, by alternative

Alternative	Miles of Open Motorized Routes Total	Miles of Open Motorized Routes in RHCAs
Alternative 1	502	115
Alternative 2	444	100
Alternative 3	349	79
Alternative 4	352	83

The effects of off-route motorized use described below for each alternative are a reflection of the total miles of open routes in combination with allowable activities within RHCAs (these vary in width from the 50 to 300 feet depending on stream and fishery values as defined by INFISH). The species-specific discussions provide more information about road effects.

Table 66 summarizes the miles and associated acres of new road and trail construction by alternative, and also summarizes the acres of potential losses of snags and down logs as a result of direct removal of these structures. The amount and distribution of these structures across the following acres is not quantified. Rather, the data reflect the amount of total acres of forested habitat affected through construction and any associated snags and down logs. The data do not reflect the absence of these structures due to already existing roads and trails.

Table 66. Direct and Indirect habitat loss of old growth habitat due to new road and trail construction

Old growth habitat	Alternative 1	Alternative 2	Alternative 3	Alternative 4
New Road Construction (Miles/Acres)	0/0	0/0	0/0	0.1/0.4
New Trail Construction (Miles/Acres)	0/0	0.3/0.3	0.3/0.3	0.3/0.3

The following table summarizes the remaining miles of roads and those proposed for decommissioning through both general forested and old growth habitat. Note that the edge effects of decommissioning would disappear over time. New road information is summarized above.

Table 67. Remaining miles and those proposed for decommissioning in old growth

Old growth habitat	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Miles of decommissioned roads through old growth habitat	0	0	1.8	2.3
Miles of open roads remaining on landscape within old growth habitat	10.1	10.1	8.2	8.2

For alternative 1, decommissioned road miles reflect those already decommissioned by recontouring and include no proposed new decommissioning. For the remaining alternatives, decommissioned road miles would occur as part of implementation of that alternative if selected and includes those miles of decommissioning that would be ripped, seeded and slashed and/or recontoured.

Direct and Indirect Effects - Alternative 1 – No Action

There are currently 502 miles of open motorized routes in the project area. Of these, 115 miles are in RHCAs. Under the existing condition, the Statewide Off-Highway Vehicle EIS and Decision are in effect which restricts motorized vehicles to existing roads and trails and allows motorized travel up to 300 feet off designated routes to reach dispersed campsites.

Under this alternative, off route use would continue to impact wildlife and their habitats especially in sensitive areas such as riparian habitats. As mentioned above, riparian areas are important to a variety of wildlife. About a quarter of the open motorized routes in the project area are located within RHCAs. This is because of the location of RHCAs (drainage bottoms) and their desirability as camping sites and other recreational festivities. Immediate effects to wildlife include disturbance and displacement associated with dispersed camping and access. However, in some cases, wildlife may have become habituated to human activity if the activity is constant.

Indirect effects on general forested habitat and old growth include disturbances to wildlife due to human activity. Habitat fragmentation and edge effects will continue to be expressed on the landscape associated with existing roads. Conversely, existing fragmentation and edge effects will decrease over time on roads proposed for decommissioning.

Direct and Indirect Effects - Alternatives 2, 3, and 4

Project Design Features

Project design features specific to terrestrial wildlife are listed in chapter 2 starting on page 43.

Under alternative 2, there would be 444 miles of open motorized routes in the planning area. Of these, 100 miles are in RHCAs. A decrease of 15 miles compared to alternative 1. Under alternative 3, there would be 349 miles of open motorized routes in the project area; 79 miles are in RHCAs, which is a decrease of 36 miles compared to alternative 1. Under alternative 4 there would be 352 miles of open motorized routes in the planning area, 83 miles are in RHCAs, which is a decrease of 32 miles compared to alternative 1. Under the existing condition, the Statewide Off-Highway Vehicle EIS and Decision are in effect which restricts motorized vehicles to existing roads and trails and allows motorized travel up to 300 feet off designated routes to reach dispersed campsites.

Under these alternatives, off-route use would continue to impact wildlife and their habitats especially in sensitive areas such as riparian habitats, although closing routes under all alternatives would decrease effects. As mentioned above, riparian areas are important to a variety of wildlife. This is because of the location of RHCAs (drainage bottoms) and their desirability as camping sites and other recreational festivities. Alternative 3 and 4 have the least amount of routes in riparian areas. Immediate effects to wildlife upon opening routes include disturbance and displacement associated with dispersed camping and access, although most likely the dispersed camp sites already exist and there is no anticipation of increased use from this project. Seasonal restrictions can also reduce these effects during certain times of the year. However, in some cases wildlife may have become habituated to human activity if the activity is constant.

Habitat value decreases as a result of off-route use. Resources may be damaged, trees and down logs may be consumed as firewood, and noxious weeds may be spread into these areas—eventually reducing native vegetation and the niche it provides. New road and trail construction would have direct effects on forested habitat or old growth habitat by removing canopy, structure, hiding cover, fragmentation, edge effects, denning, and foraging habitat.

Under alternative 3, 1.8 miles of roads are proposed for decommissioning within old growth habitats throughout the planning area, which would decrease fragmentation and edge effects as well as diminishing disturbance effects over time. In the short term positive direct effects include creating more suitable habitat for host plant regeneration by closing areas, decrease in human disturbance, allowing for various species to utilize the affected areas immediately. In the long term a beneficial effect would be the addition of potential habitat after passive restoration has occurred on the decommissioned routes.

Under alternative 4, 0.1 miles of new road construction would occur within old growth throughout the planning area, resulting in approximately 0.4 acres of disturbance or habitat removal. Also under this alternative, 2.3 miles of roads are proposed for decommissioning within old growth habitats, which would decrease fragmentation and edge effects as well as diminishing disturbance effects over time. In the short term positive direct effects include creating more suitable habitat for host plant regeneration by closing areas, decrease in human disturbance, allowing for various species to utilize the affected areas immediately. In the long term a beneficial effect would be the addition of potential habitat after passive restoration has occurred on the decommissioned routes.

New motorized and non-motorized trail construction would also be accomplished under all action alternatives, although trail construction (an 8-foot-wide clearance) would not be as intrusive as road construction (a 25-foot-wide clearance) upon individual habitat, trails could still cause disturbance and habitat issues. Under all action alternatives trail construction would occur over 0.3 miles within old growth, resulting in approximately 0.3 acres of disturbance or habitat removal. These are not contiguous miles of disturbance or habitat removal as the habitat is little polygons broken up and spacially scattered throughout the Blackfoot landscape.

Indirect effects on general forested habitat and old growth include disturbances to wildlife due to human activity. Habitat fragmentation and edge effects would continue to be expressed on the landscape associated with existing roads. Conversely, existing fragmentation and edge effects would decrease over time on roads proposed for decommissioning.

Indirectly, roads negatively impact snags and down logs by providing access for firewood retrieval (Hann et al. 1997, Joslin and Youmans 1999, Bate and Wisdom 2002a, 2002b). Traditionally, these effects were limited to the distance a person could cut and carry firewood to his/her vehicle. These days firewood retrieval is enhanced through increased technology (e.g., cable systems) and increased access through off-road driving (Bate and Wisdom 2002a).

Overall under each alternative motorized use is decreased from alternative 1. Under alternative 2 there is a decrease of 58 miles, alternative there is a decrease of 153 miles and under alternative 4 there is a decrease of 150 miles. The impact of the direct and indirect effects would be reduced from the motorized routes across the landscape under each of the proposed alternatives.

Cumulative Effects Common to All Species for All Alternatives

The cumulative effects analysis is based on those past, present, and reasonably foreseeable projects that may contribute to the effects associated with motorized use within 300 feet of open motorized routes, forested and old growth habitats. The effects analysis is common to all alternatives. The scope of the analysis includes the Blackfoot landscape and surrounding lands.

There are several past and ongoing activities occurring on the National Forest that affect general forested habitat. Some of these activities have or will have positive effects. For a complete list see appendix D. These include road decommissioning projects and some vegetation treatments that reduce fragmentation and edge effects. Overall reforestation projects are expected to be beneficial. Other activities may exacerbate fragmentation and edge effects as well as direct habitat loss. These include reopening previously closed roads, relocated roads, and some vegetation management. Vegetation management projects include HNF hazard tree removal, Poorman burn, and proposed Stonewall and Dalton vegetation management, Helmville Face, and Alice Creek and Hogum burning projects. Project specific analysis addresses direct, indirect and cumulative effects.

Continued private land development could result in increased off-route use if these developments lead to increases in road densities and/or vehicle use and are adjacent or within the National Forest. Increased vehicle use on private land could spill onto the National Forest.

Continued private land development will continue to impact forested habitat. Vegetation management on private and other lands could increase fragmentation and edge effects as well as direct loss of habitat in the long term.

Threatened and Endangered Species

Grizzly Bear

General Effects of Roads to the Grizzly Bear

Access Management

Grizzly bear habitat across the region is best described in terms of the availability of large tracts of relatively undisturbed land that provides some level of security from human uses (including roading, logging, grazing, and recreation) (USDI Fish and Wildlife Service 1993). To that end, ‘effective’ habitat is often described in terms of core areas, areas free of motorized access for each season of use (IGBC 1994). Open motorized route densities (OMRD) and total motorized routes densities (TMRD) are important measurements in determining security core areas and understanding the extent of habitat security for grizzly bears. Research has indicated that grizzly bears underutilize habitat near roads or other human activities (Mace and Waller 1996, McLellan and Shackleton 1989). Therefore, managing motorized winter access during the spring emergence period can aid in minimizing negative effects on bears and provide for secure habitat (IGBC 1994).

Access within the NCDE Recovery Zone is measured according to Forest Plan standards and the Northern Continental Divide Ecosystem Grizzly Bear Access Management Protocol and Flathead National Forest Amendment 19 (USDA Forest Service 2002a). These guidelines incorporate relatively recent science regarding access management and grizzly bears, and serve as benchmark thresholds for access management within the NCDE Recovery Zone. The Helena NF has incorporated this methodology to determine access management effects to grizzly bears within the NCDE Recovery Zone in addition to HNF Forest Plan Standards. This methodology serves as guidelines and does not replace HNF Forest Plan Standards.

Many studies have found that grizzly bears will generally avoid areas with open roads. Mace and Manley (1993) found that adult grizzly bears used habitat with open road densities greater than 1 mi/mi2 less than expected. All sex and age classes of grizzly bears used habitat with total road densities greater than 2 mi/mi2 less than expected. Grizzly bears generally adjust to disturbance associated with roads by avoiding the area that in turn results in a reduction in the amount of habitat available to the bears. Roads also provide increased access into previously remote areas that in turn encourages human settlement, recreational use including OHV use, snowmobiling, and other land uses. These activities can increase the frequency of human-bear interactions and ultimately reduce habitat availability and grizzly populations.

Seasonal habitat use by grizzly bears is also an important consideration in access management. When bears emerge from the den, they tend to search for food in lower elevations, drainage bottoms, avalanche chutes, and ungulate winter ranges (USDI Fish and Wildlife Service 1993). Throughout the late spring and early summer they move towards higher elevations as food becomes available and by December most bears are in their dens. Because spring habitat tends to be at lower elevations, early season OHV use during the spring emergence period has the potential to disturb bears traveling to lower elevation habitats or may displace bears from suitable low elevation spring habitats. Early season OHV use in big game winter ranges is restricted to designated routes that would minimize disturbance or displacement of bears in search of carrion from winter kill ungulates. The greatest potential for disturbance or displacement would be associated with lands adjacent to designated routes.

Non-motorized trail use such as hiking, horseback riding, and mountain biking may also indirectly reduce the amount of habitat available to grizzly bears. Mace and Waller (1996) suggested bears may avoid high use hiking trails; although the presence of visual cover may reduce bears response to hikers (McClellan and Shackleton 1989). Similarly, visual cover may reduce the response of bears to non-motorized uses. Currently, the level of hiking, horseback riding and mountain biking is limited within the planning area.

Direct and Indirect Effects - All Alternatives

The following effects indicators were used to focus the analysis and disclose relevant environmental effects:

- ♦ Open and total road densities and availability of security habitat
- ♦ Consistency with Forest Plan standards/guidelines and USFWS recommendations related to the grizzly bear would be met
- ♦ Potential effects associated with significant grizzly bear habitats and seasons of use

The effects analysis area is the Blackfoot Landscape Area.

Direct and Indirect Effects - Alternative 1

This alternative represents the existing condition. Among alternatives the existing condition has the highest total road miles and the fewest miles of designated motorized trails. This alternative also has a higher proportion of routes with no seasonal restrictions for wheeled use than the action alternatives. Similar to the action alternatives, motorcycles and OHVs are allowed to use forest roads as well as motorized trails. Currently, the level of use on these routes varies widely with many routes receiving very limited, infrequent use while others consistently support higher use levels from spring through fall. Motorized use of the existing route system is expected to continue to increase in the future as the surrounding human population continues to grow. The greatest increase is anticipated to be OHV use which has grown substantially in recent years.

Under the existing condition within the planning area there are no designated trails for mountain biking or horseback riding and few designated hiking trails. There are however, no restrictions on any of these activities on either open or otherwise closed routes.

The effects to grizzly bears under alternative 1 are not anticipated to be substantially different in the future than currently exist. Increased motorized use is anticipated although the existing route system would not change. No new trails or trailheads are proposed to be developed and there would be no structural changes associated with travel management to grizzly bear habitat. Although motorized use is anticipated to increase in the future it is likely that the greatest increase in use would continue to occur along established routes that already receive the most motorized use and the most avoidance by grizzly bears. Numerous routes receive very limited motorized use due to their isolation or connectivity with other system routes and use would not be anticipated to increase substantially having minimal potential to disturb or displace grizzly bear

Direct and Indirect Effects - Alternative 2, 3, and 4

Compared to the existing condition, each of three action alternatives would reduce open road miles and total miles of motorized routes. In alternative 3, motorized trails would also decrease slightly from the existing condition whereas under alternatives 2 and 4 motorized trails would increase. Similar to the existing condition, motorcycles and OHVs would still be allowed to travel designated open roads as well as motorized trails. Although each of the action alternatives would reduce total miles of open motorized routes, the connectivity among motorized routes, particularly motorized trails, would increase substantially due to construction of connector routes, trailheads or parking areas, and by opening currently closed routes. The improvements to the motorized trail system would be anticipated to result in a greater increase in OHV use than anticipated under the existing condition. In addition, each of the action alternatives would increase the miles of non-motorized trails for hiking, horseback and mountain bike riding over the existing condition.

Within the NCDE recovery zone improvements to the motorized trail system under all action alternatives includes developing a motorized trail system in areas currently closed to motorized use. This includes a trail system between Beaver creek and the Lone Point area along the western edge of the Lincoln Valley and on recently acquired lands in the eastern portion of the planning area between Alice creek and the continental divide. Both of these areas have been closed to motorized use for several years, both are known to support grizzly bear use, and both contribute to connectivity with habitats south of Highway 200 due to the topography and continuous forest cover. The two areas represent the east and west boundaries of the upper Blackfoot Valley. Within the planning area, they represent the two areas along the Blackfoot river/Highway 200 corridor where National Forest System lands come closest together.

For the trail in the Beaver/Lone Point area the impacts to bears would vary among action alternatives based on differences in seasonal restrictions. Alternative 2 would have greatest potential to negatively impact bears due to the lack of a seasonal restrictions. Alternative 3 would have the least impact among action alternatives due to a seasonal restriction from 9/1-6/30. This would minimize disturbance during the spring and fall periods when foraging activity and other use by bears would be expected to be greatest. Although alternative 4 would restrict use from 10/15-5/31 the impacts may not be substantially different from alternative 2 since early season use is often limited by snowpack. The fall duration of motorized use would likely be somewhat shorter under alternative 4 however lessening the potential to impact bears.

For the trail system on acquired lands east of Alice creek each of the action alternatives would result in a short segment of road construction, trailhead development, and construction of a segment of motorized trail near the trailhead to increase route connectivity. The same seasonal restriction of 9/1–6/30 would apply under all three action alternatives to minimize displacement of grizzly bears, elk and other species. Alternative 3 would result in the least impact to bear use by confining motorized use to the fewest miles of routes and a smaller area of use than alternatives 2 and 4. Alternative 2 would provide the most miles of motorized routes on the greatest proportion of the acquired lands and have the greatest potential to displace bears from the acquired lands. The miles of motorized routes in alternative 4 are not substantially higher than alternative 3 although the distribution of routes would have additive effects over alternative 3. The increase in potential impacts under alternative 4, are due to the possible development of a connector route between the acquired lands and the Alice creek road. The trail would cross State lands therefore requiring State authorization. It would also require additional trail construction to connect existing routes, and a bridge across Alice creek.

In addition to the development of a motorized and non-motorized route system each of the action alternatives would either place several miles of roads into storage or they would be decommissioned. The miles of storage and decommissioning varies among alternatives and these actions are anticipated to take several years to fully implement, potentially exceeding 10 years.

In addition, the action alternatives would construct additional trails to provide a designated mountain bike trail system. Portions of the mountain bike trails system would also be designated as open to horseback riding and hiking, and some trail segments overlap with motorized use. Mountain biking, horseback riding and hiking would still be allowed on all open routes as well as routes otherwise closed within the planning area.

As discussed in the elk section mountain biking is anticipated to have greater potential to disturb or displace bears than either horseback riding or hiking. Mountain bike use in the planning area is currently very limited and it is difficult to predict future use if a designated trail system is developed. If mountain bike use does become well established achieving high levels of use it may serve to discourage bear use of otherwise suitable habitats along those trails. Horseback riding is not anticipated to notably increase on those trails designated for horse use as most horse riders prefer not to share trails with motorized use or mountain bikes due to safety concerns. Hiking would be expected to increase moderately with the greatest increase anticipated on the Continental Divide Trail.

In general, alternative 2 would maximize recreational opportunities, particularly OHV use. Among action alternatives it would provide the most miles of open routes and support the longest motorized season of use. Alternative 3 was developed to address concerns about the impacts of motorized access use on bears, elk and other wildlife and as a result has fewer miles of open routes as well as more restrictive seasonal use dates for motorized trails. Alternative 4 is similar to alternative 3 in total miles of open routes however it is more similar to alternative 2 in terms of distribution and duration of motorized use.

The development of an interconnected motorized trail system as proposed under the action alternatives is anticipated to result in a considerably greater increase in future motorized use than anticipated under the no-action alternative. A recognized motorized trails system with loop and connector trails is anticipated to attract more new users than the existing trail system and would increase the distribution of use within the planning area due to trail connectivity and trailhead development.

Allowing motorized travel 300 feet off route has the potential to further degrade grizzly bear habitat through physical loss of forage and by increasing the area of disturbance that bears may avoid. This could promote the pioneering of new trails which has been a significant problem in the past and make enforcement more difficult. It may also contribute to the spread of noxious weeds indirectly reducing habitat quality.

Common to All Alternatives

Various methods are used to address grizzly bear habitat quality relative to motorized access. This section provides a collective comparison of each of the alternatives with respect to road density measurements and habitat security. In the following analysis discussion of both route and road refer to motorized roads and trails. The various access management analyses look at open route densities during the grizzly bear non-denning period. Differences among alternatives in seasonal route restrictions within the non-denning period are not reflected in these analyses.

Moving Window Analysis

The moving windows analysis measures motorized access as total route density (TRD), motorized open route density (ORD), and the percentage of a subunit in security core areas (CORE). The process for the moving windows analysis and how routes are categorized based on closure methods etc. are described in the Protocol Paper - North Continental Divide Ecosystem Grizzly Bear Access Management and Flathead National Forest, Amendment 19 - Moving Window Motorized Access Density Analysis & Security Core Area Analysis for Grizzly Bear (filed in the project record as USDA FNF 2008). The guidelines to effectively manage access and core areas for grizzly bears per the North Continental Divide Ecosystem Grizzly Bear Access Management Protocol and the Flathead National Forest Amendment 19 are described in the table 48 footnotes. Table 68(a) summarizes route density and security core areas for the three Monture-Landers Fork BMU subunits on Helena National Forest.

Non-motorized trail use such as hiking, horseback riding, and mountain biking may also indirectly reduce the amount of habitat available to grizzly bears. Mace and Waller (1996) suggested bears may avoid high use hiking trails; although the presence of visual cover may reduce bears response to hikers (McClellan and Shackleton 1989). Similarly, visual cover may reduce the response of bears to non-motorized uses. Currently, the level of hiking, horseback riding and mountain biking is limited within the project area.

Table 68a. Route density and core security areas – Monture/Landers Fork BMU

Subunit	Percent of area meeting guideline											
	Alternative 1			Alternative 2			Alternative 3			Alternative 4		
	ORD	TRD	CORE	ORD	TRD	CORE	ORD	TRD	CORE	ORD	TRD	CORE
Alice Creek[1]	10	18	70	17	13	74	13	9	76	14	9	76
Arrastra Mtn	19	21	72	17	18	75	16	17	76	16	17	76
Red Mtn	26	25	56	24	23	61	21	21	64	20	21	63

ORD - Open motorized route density guideline: ≤19% of each subunit with >1.0 mile/mi2; if <75% FS land management, then no net increase in >1.0 mile/mi2 open motorized route density class due to FS actions.

TRD - Total motorized route density guideline: ≤19% of each subunit with > 2.0 mile/mi2; if <75% FS ownership, then no net increase in >2.0 mile/mi2 open route density class due to FS actions.

CORE - Core area (>2,500 contiguous acres, ≥0.3 mi. from motorized route, no roads or trails receive "high intensity use" and no motorized routes open during non-denning period) guideline: ≥68% of the subunit considered core area; if <75% FS ownership, then no net decrease in potential security core areas due to FS actions.

[1] Alice Creek subunit meets 19/19/68 with <75% NFS lands, no net increase in OPEN &TOTAL route density and no net decrease in Security CORE

The Grizzly bear access management protocol was developed to apply to lands within the NCDE recovery zone during the non-denning period from 4/1 through 11/30 as described in the Interagency Grizzly Bear Committee (IGBC) Motorized Access Management report (1994, 1998). It does not apply to planning area lands outside the recovery zone. As noted in the Recovery Plan (USDI 1993 p.18) "bears can and are expected to exist outside the recovery zone lines in many areas. However, only the area within the recovery zone will be managed primarily for grizzly habitat. Bears living within the recovery zone are crucial to recovery goals and hence to delisting.”

Under the 2013 Blackfoot Winter Travel decision, snowmobile use is allowed in the Copper bowls play area until 5/31. All other recovery zone lands are closed to snowmobile use on 3/31. Therefore, the values presented in table 68(a) for all alternatives reflect the extended snowmobile use in the Copper Bowls Play area since it occurs outside the denning period. Allowing snowmobile use in the Copper bowls beyond 3/31 increases ORD and TRD while decreasing the amount of security core habitat for both the Red Mountain and Arrastra subunits. The duration of snowmobile use in the Copper bowls varies from year to year dependent upon snow conditions and once that use concludes the availability of CORE during the remainder of the non-denning period increases due to restrictions on wheeled motorized use. In essence, the ORD, TRD, and CORE values for the Red Mountain and Arrastra subunits are compromised due to spring season snowmobile use during the non-denning period.

As shown in table 68(a), under alternative 1, the Arrastra Mountain subunit meets the guidelines for ORD and CORE but does not meet TRD. All three action alternatives would decrease ORD and TRD and increase CORE. As a result, all action alternatives would fully meet the 19/19/68 guidelines for the Arrastra subunit. While all three action alternatives meet the guidelines, alternatives 3 and 4 equally result in the greatest improvement to the subunit with alternative 2 resulting in less improvement. Table 67(b) discloses the number and sizes (blocks) of secure core habitat generated through moving windows for each alternative. As can be interpreted from Table 67b, as the number of core blocks decreases, the sizes and contiguous nature of the core blocks increase adjusting spatially within the BMU by alternative. Core block number and size is displayed by BMU rather than subunit to demonstrate the connectivity of secure core between subunits. Looking at Table 67(b), action Alternative 3 results in the least number of core blocks with the greatest size (acres) and continuity with Alternative 4 providing very comparable statistics. These larger secure core habitats allow for grizzly bear movement throughout the BMU and aid in their ability to fulfill biological needs for survival. Likewise, these secure core areas aid in bear dispersal to neighboring landscapes supporting grizzly bear genetic vitality in the ecosystem.

Table 69b. Number and Sizes (blocks) of Secure Core Habitat Generated through Moving Windows

Core Block # ≥2500 acres[1]	**Monture / Landers Fork BMU Core Block Analysis**			
	Alt 1	Alt 2	Alt 3	Alt 4
1	140,795	151,119	154,257	153,692
2	7432	7780	8364	8364
3	3478			
Add’l Core ≤2500 acres[2]				

4	657	657	657	657
5	160	163	163	163
6	66	66	66	66
7	45	45	45	45

[1] Core blocks greater than 2500 acres contributing to secure Core for subunits and BMU (19/19/68 guideline)
[2] Additional core block habitat available but less than 2500 acre size limitation

The Red Mountain subunit currently has the most degraded baseline since it does not meet any of the 19/19/68 guidelines under the existing condition. All action alternatives would decrease ORD and TRD and increase CORE. Although this brings the subunit closer to meeting the 19/19/68 guidelines, ORD, TRD, and CORE values would continue to be exceeded under all action alternatives. As displayed in table 20, alternative 2 would result in the least improvement while ORD, TRD, and CORE for alternatives 3 and 4 are very similar and would result in the greatest improvement. As reflected by the moving windows analysis, open route densities and distribution within the subunit are similar between alternatives 3 and 4. However, the moving windows analysis counts all open routes equally during the non-denning period and does not distinguish between different seasonal restrictions within the non-denning period. For example, under alternative 4, several routes would remain open until 10/15 versus 9/1 under alternative 3 increasing the duration of motorized use but still accounted for equally in the moving windows analysis.

The Alice creek subunit meets the 19/19/68 guidelines under all Alternatives even though it has less that 75 percent NFS lands. This includes 6,240 acres acquired from The Nature Conservancy, previously Plum Creek lands, in 2006 and 2011. The guideline for subunits with less than 75 percent NFS ownership is no net increase in ORD and TRD and no net decrease in CORE. Since these are recently acquired lands with no FS travel management decision, this project decision will establish the baseline for the Alice Creek subunit with the incorporation of these lands.

Under all three action alternatives motorized wheeled use (OHVs) would be allowed in July and August and restricted from 9/1 – 6/30. This would result in an increase in ORD in the Alice Creek subunit compared to the existing condition. However, as reflected by the moving windows analysis TRD would decrease and CORE would increase under each of the action alternatives due to road storage or decommissioning. Changes in both TRD and CORE are reflective of the miles road that would be closed, stored, or decommissioned and the effectiveness of the different closure methods. In spite of public access being restricted on these roads since acquired by TNC, access is only restricted by a gate which does not constitute an effective barrier in the moving windows process. Therefore, even though there currently is not public motorized access to the acquired lands this is not reflected as CORE habitat under the existing condition. Conversely, under all action alternatives the proposed storage and decommissioning levels constitute an effective barrier in the moving windows process yielding a decrease in TRD and an increase in CORE.

Among the action alternatives, alternative 2 would provide the most extensive motorized trail system on the acquired lands in the Alice subunit in both miles and distribution and have the greatest potential to disturb or displace grizzly bears. Alternative 2 would result in the greatest increase in ORD, the least decrease in TRD, and least increase in CORE. As displayed in table 20, alternative 3 would result in the least increase in ORD while decreases in TRD and increases in CORE are similar among alternatives 3 and 4. Both alternatives 3 and 4 would provide fewer miles of motorized trails less widely distributed across acquired lands.

Alternative 4 differs from alternatives 2 and 3 in that it allows for construction of a connector trail between acquired lands in the Bartlett creek area and the main Alice Creek road #293 which is reflected in the higher ORD value for alternative 4 than alternative 3. Implementation and construction of the connector route is dependent upon acquiring motorized access across DNRC lands adjacent to the Alice creek road. Although this reflects only a minor difference in the moving windows analysis between alternatives 3 and 4 as displayed in table 20, this represents a more substantive change from the existing condition and has greater potential for direct, indirect, and cumulative effects to grizzly bears and other wildlife than alternative 3. Under the existing condition, motorized access in the Alice Creek area is largely limited to the main Alice Creek road #293 and motorized use by OHVs has remained relatively low due to the lack of secondary roads and connector routes. Traditionally, the Alice Creek drainage has attracted considerable equestrian use throughout the summer and fall. This is due to the presence of several undeveloped campsites on FS lands that are well suited to equestrian camping, the unroaded character of the area, and gentler topography with less contiguous forest cover than found throughout most of the planning area. It would be anticipated that development of a connector route into Alice creek would result in a notable increase in motorized use of the Alice creek road with greater potential for disturbance and displacement of bears form habitats along the road corridor.

In summary, all action alternatives improve ORD, TRD, and CORE in all three subunits over the existing condition. The least improvement occurs in the Arrastra subunit while the greatest improvement occurs in the Red Mountain subunit. For the Alice creek subunit, this travel management decision following consultation with the USFWS will establish the subunit baseline incorporating the 6,240 acres of acquired lands. The Red Mountain subunit would still have a degraded baseline under all action alternatives. However, both alternatives 3 and 4 would result in considerable improvement in ORD, TRD, and CORE over the existing condition. Both ORD and TRD would be with 1-2 percent above the 19 guideline versus 6-7 percent above under the existing condition. Under alternatives 3 and 4 CORE would be 4-5 percent below the 68 percent guideline versus 12 percent below under the existing condition.

Alternative 4 would extend the season of use for most motorized trails, develop a connector trail between Alice Creek and adjacent acquired lands, and increase the length of the Stonewall Mtn. trail by creating switchbacks along the ridge to provide more vistas resulting in the removal of 200-300 predominantly young whitebark pine, all of which serve to have greater potential to impact bears than under alternative 3.

Forest Plan Standard - Open road density in occupied habitat

The Forest Plan standard for open route density within “occupied” grizzly habitat is 0.55 mile per square mile (HNF FP pg. II-19). Occupied grizzly habitat is identified in Appendix D of the Forest Plan and in the Forest Plan FEIS (pgs. III/22, III/23). Occupied habitat on the HNF includes approximately 190,700 acres. Occupied habitat as defined in the FP and the FEIS is not consistent with the NCDE Grizzly Bear Recovery Zone boundary. Table 70 below summarizes the open route density (includes all open motorized roads and trails during the non-denning period) for occupied habitat for the four alternatives. As displayed, the FP standard is met for all alternatives.

Table 70. Forest Plan occupied habitat open route densities by alternative

FP Standard = < 0.55 mi/mi2 - Occupied habitat = 298 mi2			
Alternative	**Miles of Open Route**	**Change in Open Route Miles from Existing**	**Open Route Density (mi/mi2)**
Alternative 1	135.6	N/A	0.46
Alternative 2	124.9	- 10.7	0.42
Alternative 3	107.9	- 27.7	0.36
Alternative 4	102.2	- 33.4	0.34

The existing condition has the highest open route densities even though it is below the Forest Plan standard of no more than 0.55 mi/mi2. All action alternatives would further reduce open route densities well below the standard. Similar to the moving windows analysis, alternatives 3 and 4 result in the greatest reduction of open route densities providing greater benefit than alternatives 1 or 2 to grizzly bear and other species sensitive to motorized route densities.

The Forest Plan standard accounts for linear miles of all open motorized routes during the non-denning period regardless of seasonal use restrictions within that time period. Among the alternatives, alternative 1 has the greatest miles of routes and fewer seasonal restrictions therefore the potential for disturbance to grizzly bears would be anticipated to be greatest among all alternatives. Alternative 2 would be less than alternative 1 but greater than alternatives 3 and 4 relative to open route miles and duration of use. The potential for alternatives 3 and 4 to disturb or displace bears is similar based on open road densities. Alternative 4 has slightly fewer miles of open routes than alternative 3 however the potential for alternative 4 to affect grizzlies is greater due to the longer season of use on several routes. Alternative 3 does the most to limit the season of use, particularly on motorized trails, reducing the duration and distribution of disturbance to bears.

Subunit Open Road Densities

The Forest Plan standard for open road density is specific to “occupied” grizzly habitat as identified in Appendix D of the Forest Plan. That boundary is different from the BMU/subunit boundaries. While FP direction does not require application of the standard (not to exceed 0.55 mi/mi2) for the BMU subunits, that analysis was completed and is shown in Table 71 that follows. The open road density analysis by subunit uses the same methodology as used for occupied habitat.

Table 71. Subunit open route densities by alternative

Subunit	**Square Miles**	**Miles Open Route**				**Open Route Density**			
		Alt 1	**Alt 2**	**Alt 3**	**Alt 4**	**Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**
Alice Creek	108.3	36.8	51.0	37.6	39.1	.34	.47	.35	.36
Arrastra Mtn	109.7	53.8	54.0	46.6	45.5	.49	.49	.42	.41
Red Mtn	119.9	58.7	50.7	40.8	36.0	.49	.42	.34	.30
BMU Total	**337.9**	**149.3**	**155.7**	**125.0**	**120.6**	**.44**	**.46**	**.37**	**.36**

Distribution Zone Open Road Densities

All planning area lands outside the recovery zone and south of Highway 200 are within the grizzly bear distribution zone. Access management direction applied to lands within the recovery zone and the FP standard for occupied habitat do not apply to the remaining distribution zone lands in the project area. Road densities outside the recovery zone are typically higher due to their proximity to human population centers, varied ownerships, and a long history of various human uses. The analysis provides a comparison between alternatives for grizzly bears, elk, and other species influenced by access management. The miles of open road and open road densities for the grizzly distribution zone within the project area are shown in table 72.

Table 72. Distribution zone open route miles and densities by alternative

Distribution zone = 269 mi2			
Alternative	**Miles of Open Road**	**Change in Open Road Miles from Existing**	**Open Road Density (mi/mi^2)**
Alternative 1	427	N/A	1.6
Alternative 2	363	- 64	1.3
Alternative 3	300	- 127	1.1
Alternative 4	308	-119	1.1

Compared to the open route density values for the grizzly bear subunits and FP occupied habitat, route densities in the distribution zone are considerably higher. However, both occupied habitat and BMU subunits include lands in the Scapegoat Wilderness. In the elk section of this report, habitat effectives (HE) is an analysis tool that was used to evaluate potential elk summer use of an area based upon open route densities. The methodology was developed by Lyons (1983) as an outcome of the Montana Elk Logging Study summarized in appendix C of the FP. The relationship is reflected as a curve with increasing potential use by elk as open route densities decline. On an elk herd unit basis, the recommended minimum habitat effectiveness for elk is 50 percent which represents a route density of approximately 1.75 mile/square mile. Based on the HE values generated for the elk analysis, the respective HE values for alternatives 1, 2, 3, and 4 are approximately 51 percent and 56 percent for alternatives 1 and 2 respectively, and 58 percent for alternatives 3 and 4.

Since studies have shown a very similar relationship to open route densities by grizzly bears and elk, it can be assumed that while the route densities under the existing condition are not excluding grizzly bear use, the lower open route densities and higher HE values in alternatives 3 and 4 would be less exclusive to grizzly bear use.

Special Habitats

Denning Habitat

It is not anticipated that there would be any direct or indirect effects to grizzly bear denning habitat associated with summer access management since they do not overlap in time or space. The NCDE adopted grizzly bear denning period is from 12/1 through 3/31 when the remote, high elevation, snow covered landscapes selected by bears for denning are inaccessible to wheel-motorized use. As discussed for winter travel, the majority of modeled denning habitat north of Highway 200 is within the Scapegoat Wilderness or along the ridgeline defining the wilderness boundary. South of the Highway supports considerably less modeled denning habitat that is predominantly scattered along the continental divide.

Foraging and Travel

Various landscape features in the project area are import to grizzly bears for foraging, seasonal movement, or dispersal. The head of the Copper creek drainage for instance has high value to grizzly bears in part due the long reach of the drainage and the numerous other drainages sharing its outer perimeter that facilitate movement between various habitats. The steep head of Copper creek provides late spring early and summer foraging in avalanche chutes and along the extensive network of connecting ridgelines. Specifically, the ridge complex of Stonewall Mountain and upper Copper Creek have been identified as summer-fall whitebark pine foraging areas for grizzly bears by Forest Service and MFWP biologists. Both agencys' biologists acknowledge that motorized use of the Stonewall Mountain trail #417 could hinder bears from utilizing this source of fall nutrition. Recognizing late summer and fall, as being a biologically important time for bears as they prepare for winter hibernation, MFWP and Forest biologists agree that access restrictions on motorized use of the Stonewall Mountain trail #417 is prudent to ensuring this fall food source remains available to grizzly bears. Continued discussions and meetings may be necessary to formulate a suitable fall-spring motorized restriction for Stonewall Mountain trail #417 to effectively secure both fall foraging in the form of whitebark pine stands and spring foraging/rearing habitat in the Stonewall Mountain ridgeline complex of the BMU. Similarly, numerous parts of the continental divide also provide important foraging areas for roots and tubers as well as insect feeding sites. The general flow of the continental divide on the landscape allows north/south travel of dispersing bears as well as access to additional food sources.

Under alternatives 3 and 4 a new motorized connector trail is proposed east of Highway 279 on the north side of the Sandbar drainage. The new connector trail (4090-F1) would connect route 4090 in Sandbar with route U-403 in the adjacent drainage to the north and continue east over the ridge into the head of Sandbar. The intent of the alternate route is to avoid a private land parcel in the east half of section 32 where the trail currently exists. Route U-403 leads to the southern portion of the open ridge in the NW corner of section 32. From there the ridge extends north along the western edge of the Mike horse Mine area. The trail crosses the ridge at almost the exact location that has been used annually by researchers since 2006 to monitor fall raptor migrations. Golden eagles are the primary emphasis of the research that includes leg banding, wing tagging, and fitting some individuals with radio transmitters to gain insight on migratory patterns and behavior. The research is conducted under permit with the USFWS and MFWP and through special use permit with the HNF.

Under the existing condition route U-403 extends from private lands near Highway 279 to the ridge and serves as the access route for the researchers from early September into November when the eagle migration occurs. The capture site is located on the ridgeline to have maximum effectiveness at attracting eagles. Under alternative 3 public motorized use would be restricted on this route from 9/1 to 6/30 which would minimize effects upon the research efforts. Under alternative 4 public motorized use would be allowed until 10/15 overlapping with the peak eagle migration period directly affecting research efforts. Recreational motorized use occurring along the ridge near the trap site would have a substantial impact upon eagle trapping success. Golden eagles have incredible eyesight enabling them to recognize prey from several miles away. They also exhibit a high degree of sensitivity to human presence and movement at the trap site and motorized use would deter individuals from being lured to the trap site, and would likely render the site unsuitable to continue the research efforts. Both alternatives 3 and 4 propose to decommission the lower portion of route U-403 that is the access route used by the researchers.

In addition to conflicts with the eagle research, the open ridgeline extending north from the research site receives late spring early summer use by grizzly bears digging for roots and tubers as evidenced by diggings along the ridge (personal communication with Jamie Jonquil, MFWP, and personal observation). The open nature of the ridgeline would easily facilitate unauthorized travel along the entire ridge by OHVs, which is already evident. The seasonal restriction of 9/1 to 6/30 under alternative 3 would help reduce the potential displacement of bears from the ridge during this period although some level of displacement would likely occur. Under alternative 4, the seasonal restriction of 10/15 to 5/31, has greater overlap with the period of use by grizzlies and has greater potential for disturbance and displacement of bears.

Cumulative Effects Common to the Grizzly Bear for All Alternatives

Cumulative effects are those that have the potential to affect grizzly bears in the same time or place. There are several past and ongoing activities occurring on the national forest that affect general forested habitat. Some of these activities have or will have positive effects. For a complete list see appendix D. These include road decommissioning projects and some vegetation treatments that reduce fragmentation and edge effects. Overall reforestation projects are expected to be beneficial. Other activities may exacerbate fragmentation and edge effects as well as direct habitat loss. These include reopening previously closed roads, relocated roads, and some vegetation management. Vegetation management projects include HNF hazard tree removal, Poorman burn, and proposed Stonewall and Dalton vegetation management, Helmville Face, and Alice Creek burning project. Project specific analysis addresses direct, indirect and cumulative effects.

One of the most important past and future management activities influencing grizzly bear habitat use has been road construction. Roads have facilitated human access into grizzly bear habitat, during denning and non-denning seasons, which can be directly associated with bear mortality (Mattson et al. 1987, Caseworm and Wakened 2003). Within the Monture – Landers Fork BMU road densities are managed in accordance with the *Northern Continental Divide Ecosystem Grizzly Bear Access Management Protocol and Flathead National Forest Amendment 19* (USDA 2002a) which considers open route density, total route density, and security core habitat to conserve grizzly bears. Both action alternatives serve to reduce the existing open and total route densities and increase security core habitat. Route densities outside of the recovery zone are managed to provide secure areas for big game, which tend to benefit grizzly bears.

Vegetation management projects that remove forest cover can make bears more susceptible to displacement for motorized use. Roads built to access timber may later be used as travel routes. Timber harvest activities have the potential to displace bears to less suitable habitats.

Land adjustments, such as the recent FS acquisition of previously owned Plum Creek lands from TNC as discussed under direct and indirect effects, can contribute to cumulative effects upon grizzlies through modifications to access management and authorized recreational uses. Under the proposed action these lands would allow motorized use which is a change from the current management direction and may serve to displace bear use.

Recent and ongoing travel planning efforts on adjacent Forests, as well as the Lincoln Ranger District, could be beneficial to bears by providing secure habitats free from motorized access. Because grizzlies are capable of traveling long distances, improved habitat conditions on other Forests could improve grizzly populations and subsequent dispersal opportunities.

Other ongoing and foreseeable management actions (e.g. tree planting, timber harvest, thinning, gathering forest products, road maintenance and developed recreation activities, etc.) in the cumulative effects analysis area are not expected to adversely affect grizzlies.

At present, development in the project area is limited and there are no significant developments within the project that would contribute appreciably to summer motorized use. The potential for future development of private land adjacent to or within the project area is unknown but there is limited potential for future developments within the project area to significantly contribute to effects upon bears. This potential linkage habitat for grizzly bears may allow for connectivity of habitats to the south with core habitat areas in the Scapegoat and Bob Marshall Wilderness areas. Under both action alternatives motorized use would decrease.

Attractants

The entire NCDE grizzly bear recovery zone has a food storage order in effect. Additionally, in April, 2005, a special order was signed applying the food storage order across the entire Blackfoot landscape area.

The potential for bears to become habituated and conditioned to human-related foods would be similar under the three alternative but providing more secure habitat for bears and reducing access routes into bear habitat may help to reduce potential food related conflicts.

Linkage Habitat

The 1993 recovery plan includes an objective to identify management measures that will remove limiting factors so that populations will meet recovery. One of the factors targeted for examination is habitat linkage zones that may facilitate movement between existing grizzly bear recovery zones (USDI 1993, pg. 24). In recent years the importance of linkage zones has gained recognition and acceptance and greater attention has been focused on identifying and analyzing wildlife linkage zones.

It is recognized that the southern portion of the project area outside the recovery zone, may function as linkage habitat due to relatively low human use of the area and the presence of contiguous forested habitat. This entire portion of the project area is within the mapped Grizzly Bear distribution zone (USDA 2002) which was developed based upon known occurrences of grizzly bears.

Determination of Effects

It is the conclusion of this analysis that implementation of any of the four Blackfoot Non-Winter Travel Alternatives would result in a “may affect, likely to adversely affect” determination for grizzly bears.

Rationale for this determination includes: (1) None of the four alternatives meet the 19/19/68 NCDE access management guidelines for the Red Mountain subunit which has a degraded baseline; (2) there is no established baseline for the Alice Creek subunit which establishes management direction for 6,240 acres of recently acquired lands incorporated into the subunit; (3) under the action alternatives some routes currently opened to motorized access would be closed however some currently closed routes in areas where motorized use does not currently occur would be opened to motorized access; (4) additional miles of motorized roads, trails, and non-motorized trails, and trailheads would be constructed under the action alternatives; (5) construction activities associated with storage and decommissioning of roads would take several years resulting in short term disturbance or displacement of grizzlies but would improve long term habitat effectiveness and security.

Canada Lynx

Direct, Indirect, and Cumulative Effects Analysis

Potential direct and indirect effects of summer recreational uses are primarily associated with potential effects upon lynx productivity, mortality risks, and effects upon lynx movement.

Effects Common to All Alternatives

Among motorized routes, highways present the greatest risk of direct mortality to lynx and serve as the biggest barrier to lynx movements. The project area encompasses two 2-lane highways. Both are Montana State owned and managed highways. State Highway 200 bisects the project area paralleling the Blackfoot river in an east/west orientation and Highway 279 extends south along the eastern portion of the project area from its junction with Highway 200. The nearest known lynx highway mortality occurred in 2003 within the four-lane segment of Highway 12 near the McDonald Pass area (Gayle Joslin, MFWP, personal communication, August 2005), approximately 15 miles beyond the southern boundary of the project area. While Highways 200 and 279 may pose mortality risks to lynx or impede lynx movements, the management of these highways does not fall under FS authority and would remain unchanged under all alternatives.

Limited information is available on the magnitude of lynx mortality on forest roads. Forest roads within the project area are generally low-speed (<45 mph), single or double-lane gravel roads. Although many species of wildlife are disturbed when forest roads are used (Ruediger 1996), preliminary information suggests that lynx do not avoid roads (McKelvey et al. 2000*c*), except at high highway traffic volumes (Apps 2000, Squires et al. 2010). The best information suggests that the types of roads managed by the Forest Service do not adversely affect lynx as vehicle strikes on forest roads are unlikely, given the relatively slow speeds at which vehicles travel on these roads (due to topography and road conditions) and generally low traffic volumes (USDI FWS 2007).

A recent analysis on the Okanogan NF in Washington showed lynx neither preferred nor avoided forest roads, and the existing road density did not appear to affect lynx habitat selection (McKelvey et al. 2000). In Minnesota, Moen et al. (2010) found that lynx selected roads during long-distance movements and although roads may not have been essential to these movements, lynx appeared to beneft energetically from the use of these linear features.

In denning habitat, when roads are used during summer, lynx may be affected if they move their kittens to avoid the disturbance (Ruggiero et al. 2000). Squires et al. (2008) reported that lynx denned farther from all roads compared to random expectation. Lynx occupy dens in early May when many forest roads are still impassable by wheeled vehicles due to persistent snowdrifts and wet, muddy roads; over-snow vehicles no longer used the roads because of intermittent and unpredictable availability of sufficient snow (Squires et al. 2008). They concluded that lynx did not avoid the subset of roads that were open to wheeled vehicle travel. Rather, the observed avoidance of roads was more a function of the correlation of roads and landscape pattern; fewer roads were located in denning habitat and higher road density occurred along forest edges and in managed stands which lynx avoided (Squires et al. 2010).

Trails in the project area are generally narrow corridors, single-tack or two-track with native surface. Currently there is no information to suggest that trails have negative impacts on lynx other than disturbance associated with motorized use. The minimal loss of habitat would not preclude lynx use of adjacent habitat and trail use would not preclude lynx from crossing the trail. Non-motorized trails are anticipated to have less potential for disturbance than motorized trails.

The susceptibility of lynx to incidental trapping would remain similar under all three alternatives. Regulated lynx trapping is currently prohibited in the contiguous United States, however incidental captures of lynx can occur in areas where regulated trapping for other species overlaps with lynx habitats (Squires and Laurion 2000, Vashon et al. 2012). Under all alternatives the accessibility of routes to wheeled motorized use during the winter trapping season would remain very limited due to snow accumulations. The trapping season is regulated by MFWP and the susceptibility of lynx to trapping would remain unchanged under any of the alternatives.

Direct and Indirect Effects - Alternative 1

Under this alternative no new route construction would occur and the current level and distribution of non-winter motorized access within the project area would be retained. Total miles of open motorized routes would remain highest among all alternatives at 502 miles including 446 miles of motorized roads and 56 miles of motorized trails. In addition, user created trails would continue to receive motorized use contributing to continued unclassified use of various yearlong or seasonally closed roads. Although the best information suggests forest roads do not adversely affect lynx (USDI Fish and Wildlife Service 2007), motorized use associated with higher open motorized route densities would provide less habitat security and may potentially reduce habitat connectivity by deterring lynx movements.

Alternative 1 would have no direct or indirect effect upon the vegetative structure or condition of the boreal forest landscape, the primary constituent element of lynx critical habitat. No new trails, parking areas, other improvements or developments would occur under this alternative. Boreal forest habitat would retain its current abundance, distribution, and availability to lynx. The total miles of roads and trails in boreal forest habitat would remain unchanged both temporally and spatially. The effects to winter snow conditions would remain unchanged and current abundance and distribution of snowshoe hares, denning habitat, and matrix habitat would remain unchanged at current levels of availability.

Direct and Indirect Effects - Alternative 2

Under this alternative the total miles of open motorized routes would be reduced by 58 miles providing 444 miles of motorized open routes compared to 502 miles under the existing condition. This includes a 94 mile decrease in total open road density but a 36 mile increase in motorized trails. The miles of motorized routes without seasonal restrictions would decrease by 10 miles, from 327 to 317, under alternative 2. Construction includes 0.2 miles of new road and 0.5 miles of road reconstruction, and 2.0 miles of new motorized trail. In addition, 31.5 miles of non-motorized trail, primarily mountain bike trail would be constructed which is common to alts 2 and 3. In total, this alternative would provide 352 miles of road and 92 miles of trail open to motorized use.

The potential effects of this alternative would be similar to the existing condition in the context that existing information suggests forest roads do not adversely affect lynx. The reduced miles of open routes may serve to further minimize effects to lynx and their habitat. However, total motorized routes with no seasonal restrictions would only decrease by 10 miles and connectivity between motorized trails would increase. Therefore, the duration of motorized use within the planning area would not change substantially. Alternative 2 would also increase connectivity between motorized trails through new motorized trail construction and by changing the designation of some existing routes to create connectors. Collectively, this will serve to increase motorized use in some areas where it currently does not exists and may increase use in other areas that currently receive limited OHV use. While at a local scale the reintroduction of motorized use may result in some degree of habitat fragmentation, forest roads generally result in minimal fragmentation to lynx which are known to readily cross and even travel on forest roads with low to moderate levels of motorized use. It is anticipated that the increased miles of motorized trail and the increase in connectivity between trails would result in an increase in OHV use, however it is difficult to predict the level of increase and at what level it may affect lynx habitat use.

This alternative would create an additional 49 miles of designated non-motorized trails. This includes 31.5 miles of new construction of which 31 miles are for mountain bike trails. The potential for non-motorized trail use to impact lynx is less than motorized use although high levels of use can potentially result in disturbance to lynx and collectively with motorized use serve to reduce habitat effectiveness for lynx and other species. In general, constructed mountain bike trails would be a narrow corridor with a native surface and there is no information to suggest that non-motorized trails have negative impacts on lynx. Mountain biking and other non-motorized uses have very limited potential to disturb lynx due to the minimal noise level, low traffic levels, and limited season of use. Construction activities are not anticipated to significantly impact lynx or their habitat due to the minimal amount of vegetation that will be disturbed along the narrow trail corridor. Noise and activity associated with trail and road construction may result in some minor disturbance to lynx although lynx are generally tolerant of human activities including motorized use.

The construction of 0.2 miles of new road and 2 miles of scattered motorized trail segments would result in minimal vegetation loss in areas that do not provide quality lynx habitat but may serve as matrix habitat. The construction of mountain bike trails has the potential to directly affect more suitable lynx habitat due to their location on the landscape relative to known lynx occurrences and habitat characteristics. These trails however, are narrower than roads or motorized trails resulting in less vegetative disturbance and the type of use results in less direct disturbance to lynx due to the lack of associated noise. None of the construction is anticipated to preclude use of the surrounding area by lynx and the associated vegetative loss is not anticipated to affect the availability of prey.

Direct and Indirect Effects - Alternative 3

The potential effects to lynx and their habitat would be lowest under this alternative due to the greater reduction in motorized routes and more seasonal restrictions on motorized use reducing the duration of motorized use. Under this alternative the total miles of open motorized routes would be reduced by 153 miles from the existing condition. Alternative 3 would provide 349 miles of motorized open routes compared to 502 and 444 miles under alternatives 1 and 2 respectively. In total, this alternative would provide 302 miles of open road and 47 miles of open trail. New road construction is the same as alternative 2. This alternative includes 0.5 miles of road reconstruction and 3 miles of motorized trail construction compared to 2 miles in alternative 2. This alternative would provide 226 miles of routes open to motorized use with no seasonal restrictions whereas, alternative 2 has 317 miles and alternative 1 has 327 miles. Overall, the reduction in total miles of motorized routes and fewer routes with no seasonal restriction would have the least potential to disturb lynx throughout the non-winter period and would provide the greatest connectivity between suitable patches of lynx habitat.

In addition to having the fewest miles of open roads, over the long term alternative 3 would also improve habitat connectivity for lynx and other species by decommissioning 200 miles of road and putting 76 miles into storage. Alternative 2 would decommission only 8 miles and store135 miles of road. Road decommissioning and storage activities would result in some short term disturbance but over the longer term would serve to improve lynx habitat and habitat connectivity.

Alternative 3 would be most restrictive of motorized use associated with the CDNST, Helmville-Gould and Stonewall trails. Under alternative 2, motorized use would remain unchanged from the existing condition. Under this alternative, motorized use on the CDNST would be limited to approximately to 1 mile of trail to maintain connectivity with other motorized routes; the Stonewall trail would restrict motorized use from 9/1-6/30; and the Helmville-Gould trail would be closed to wheeled motorized use yearlong. Each of the respective trails bisects areas that lynx may use as they travel between more suitable habitats. As noted previously, lynx are generally not deterred from crossing forest roads or trails with low to moderate levels of motorized use. Under the current condition the Stonewall trail likely receives the highest motorized use due to its proximity to Lincoln, while portions of the CDNST and Helmville-Gould trail are more limited to motorcycle use. The proposed restrictions on each of these trails would serve to reduce disturbance in these areas and enhance connectivity between suitable patches of lynx habitat. It is not known if these trails are currently inhibiting lynx movements although anticipated increases in future motorized use in other portions of the planning area may become more of an impediment to lynx movement during the non-winter period.

Direct and Indirect Effects - Alternative 4

The effects of alternative 4 are similar to those described for alternatives 2 and 3 although spatial and temporal differences exist between alternatives. Among the action alternatives, alternative 4 would result in the greatest reduction (150 miles) of open roads but would have more motorized trails than alternatives 1 and 3. Alternative 4 would provide 352 miles of open motorized routes compared to 502, 444, and 349 miles for Alternatives 1, 2, and 3 respectively. Alternative 4 would provide 289 miles of open road and 63 miles of open trail. Total motorized trails and total motorized routes although less than the existing condition and alternative 2, are slightly higher than in alternative 3. In addition, alternative 4 would extend the season of use on motorized trails compared to alternative 3. Unique to alternative 4 is a 5/31 season beginning date for 19 miles of trail in the Mike Horse area. This alternative also allows use until 10/15 on 39 miles of trail. Under alternative 3 all motorized trails (47 miles) would have a seasonal restriction of 9/1 – 6/30 while under alternative 4 only 12 miles share this restriction.

New road construction and reconstruction under alternative 4 is similar to alternative 3. For motorized trails this alternative would result in greater disturbance by constructing 4 miles of new motorized trail, relocating 9 miles of motorized trail, and reconstructing 3 mile of non-motorized trail. Conversely, this alternative would only construct 21 miles of new non-motorized trails compared to 31.5 miles under alternatives 2 and 3.

Trail improvements and the relocation of trail segments would occur on the Stonewall and Helmville-Gould trails. Proposed relocation on the Stonewall trail would include approximately 3 miles of reroute to reduce erosion and to enhance scenic vistas. Proposed improvement and reroutes to the lower portion of the trail would serve to reduce erosion problems that currently exist. Proposed changes to the upper portion of the trail include creating switchbacks along the ridge primarily to provide more scenic overlooks than currently exists. This would require the removal of approximately 200-300 predominantly young whitebark pine reducing cover and forage for prey species. The series of switchbacks would also increase disturbance on the ridge that may serve to reduce travel along the ridge by lynx and other species including grizzly bears. Indirectly, enhancing vistas for increased user enjoyment may serve to increase motorized use of the trail adding to the level of disturbance. It is anticipated that future OHV use will continue to grow as it has in past years and the development and designation of a motorized trail system with a series of connected routes is also likely to contribute to an increase in OHV use in the planning area.

Proposed improvements and reroutes to the Helmville-Gould trail are anticipated to result in a greater increase in motorized use of the trail than either alternative 1 or 2. Under the existing condition the middle portion of the trail is primarily a single track trail that precludes most OHV riders from going all the way through. Trail improvements would make the entire trail compatible to OHV use and result in a greater level of motorized use than exists under alternatives 1 or 2. It is not anticipated that the increase in motorized use would preclude lynx movements but it may serve as a greater deterrent to lynx movements during periods of heavy motorized use than would exits under alternatives 1 or 2.

Direct and Indirect Effects Common to All Action Alternatives

All three action alternatives would serve to further reduce the already low risk of mortality associated with vehicle strikes on National Forest System roads. While this may serve to concentrate more vehicle use on the remaining open roads, lynx would be exposed to fewer roads with motorized use reducing the potential for vehicle related mortality and illegal shooting.

Although forest roads provide access into lynx habitat where incidental trapping or illegal shooting can occur, none of the alternatives are anticipated to increase the risk of incidental trapping to lynx. Roads that remain available to wheeled motorized travel during the trapping season which begins in December would remain largely unchanged under any of the action alternatives. Much of the trapping in the planning area is done by snowmobile travel. Indirectly, new road and trail construction, including mountain bike trails could facilitate snowmobile travel into areas that are less accessible under the existing condition. It is anticipated this would have minimal effect upon the risk to illegal or incidental trapping however, due to existing roads or trails and the ability of snowmobiles to travel cross country.

The potential effects to lynx associated with allowing various activities within a 300-foot buffer on either side of a road or trail would not be substantially different among alternatives. Under all alternatives this could result in some minor loss or degradation of suitable habitat for prey species and could temporally displace lynx. Not all road and trail segments are conducive to off route motorized travel due to forest cover and topography and it is difficult to predict the extent of travel that may occur within the buffer. The most detrimental effects would be associated with the pioneering of new trails that serve to reduce habitat security.

Northern Rockies Lynx Management Direction

The applicable Northern Rockies Lynx Management Direction (NRLMD) objectives, standards, and guidelines for the Blackfoot travel planning area are identified below. This project does not propose vegetation management activities and practices or changes to livestock management therefore objectives, standards, and guidelines for these activities are not applicable.

For clarification, the Record of Decision (2007) for the Northern Rockies Lynx Management Direction (NRLMD) provides direction on the application of various objectives, standards, and guidelines for management practices and activities (project planning) within mapped lynx habitat (lynx analysis units) as well as mapped linkage areas. The NRLMD Decision organizes potential activities into specific groups. As a human access / road (travel) activity, the Blackfoot Travel Plan does not fall within the vegetation management activities group. According to the NRLMD Decision, a vegetation management activity is specifically defined as one that "changes the composition and structure of vegetation to meet specific objectives, using such means as prescribed fire or timber harvest. For the purposes of this decision (NRLMD), the term does not include removing vegetation for permanent developments like mineral operations, ski runs, roads and the like…" The NRLMD contains additional guidance applicable to management activities such as roads, ski runs, and those falling within linkage areas and the Blackfoot Travel Plan components were filtered through these applicable standards and guidelines as demonstrated in the FEIS Table 71 (also, Wildlife Specialist Report, pp 98-111). The vegetation standards of the NRLMD are also not applicable to the Forest Plan amendment for wildlife Standard 4a or to the designation of the portion of the Continental Divide Trail #440 which runs through the Granite Butte proposed RNA, as non-motorized. Neither of these amendments qualify as a vegetation management activity as defined by the NRLMD Decision. The amendment for wildlife Standard 4a would simply be a change in methodology for calculating elk security during the fall season, while the amendment for the Continental Divide Trail #440 trail section would be a status change governing trail use.

The following objectives, standards, and guidelines apply to all management practices in lynx habitat in lynx analysis units (LAUs) and in linkage areas, subject to valid existing rights.

Table 73. Objectives, standards or guidelines for all management practices and activities in lynx habitat in lynx analysis units and linkage areas (ALL)

Objective, Standard, or Guideline	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Objective ALL O1 Maintain or restore lynx habitat connectivity in and between LAUs and in linkage areas.	Habitat connectivity in and between LAUs and linkage areas would be retained at its current level. The alternative is in compliance with Objective ALL O1.	Lynx habitat connectivity would be maintained in and between LAUs and in linkage areas due to the net decrease in open motorized routes. In total, motorized routes decrease by 52 miles. Open roads would decrease by 94 miles although motorized trails increase by 42 miles. New construction of motorized road (0.2 mi) and trail (2.0 mi) and non-motorized trail (31.5 mi) would not serve to reduce connectivity. Stored (135 mi) and 8 miles of decommissioned roads would improve connectivity. The alternative is in compliance with Objective ALL O1.	Similar to alternative 2 although a greater reduction in open motorized routes and more seasonal restrictions on motorized trails in particular. In total, motorized routes decrease by 153 miles. Open roads would decrease by 144 miles and motorized trails would decrease by 9 miles. New road construction of 0.2 mi.; 3 miles of new motorized trail; 0.5 miles of road reconstruct. Non-motorized trail construct the same as alternative 2. Greater increase in connectivity than alternative 2 due to stored (76 mi) and decommissioned (200 mi) roads. The alternative is in compliance with Objective ALL O1.	Similar to alternative 3 in total motorized routes but longer season of use on motorized trails. In total, motorized routes decrease by 150 miles. Open roads would decrease by 157 miles but motorized trails would increase by 7 miles. New road construction of 0.2 mi.; 4 miles of new motorized trail; 0.5 miles of road reconstruct; relocate 9 miles motorized trail and 3 miles non-motorized trail; new construct 21 miles non-motorized. Increase in connectivity similar to alternative. Increase in stored (82 mi) and decommissioned (212 mi) roads offset by longer motorized use and Alice creek connector trail. The alternative is in compliance with Objective ALL O1.
Standard ALL S1 New or expanded permanent developments and vegetation management projects must maintain habitat connectivity in a LAU and/or linkage area.	No new or expanded developments or vegetation management actions would occur and connectivity would be maintained at its current level. The alternative is in compliance with Standard ALL S1.	This project does not propose new or expanded permanent developments and is not a vegetation management project. Motorized use is largely restricted to existing roads and trails and vegetation loss due to new route development would be minimal maintaining connectivity in LAUs and linkage areas. Total motorized routes would	Same as alternative 2 although the reduction in motorized routes is more than double. Vegetative disturbance associated with the construction of 0.5 miles of new road and 3 miles of new trail would have insignificant effects upon connectivity. The alternative is in compliance with Standard ALL S1.	Similar to alternative 3. Total miles of open motorized routes and reclaimed roads as shown in All O1,is similar to alternative 3. Connectivity would be maintained although the longer season of motorized use, the 9 miles of trail improvements and relocation, and Alice creek connector trail have greater potential to impact connectivity in LAUs and linkage areas than exist in alternative 3. The

Objective, Standard, or Guideline	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Alternative 4**
		decrease by 58 miles and vegetation disturbance due to new construction of motorized routes and non-motorized trails as shown under ALL O1 would be insignificant. This alternative would maintain connectivity in LAUs and linkage areas and complies with Standard ALL S1.		alternative is in compliance with Standard ALL S1.
Guideline ALL G1 Methods to avoid or reduce effects on lynx should be used when constructing or reconstructing highways or forest highways across federal land. Methods could include fencing, underpasses, or overpasses.	This project does not include construction or reconstruction of highways or forest highways. The alternative is in compliance with Guideline ALL G.	Same as alternative 1.	Same as alternative 1.	Same as alternative 1.
Guideline ALL G2 Changes in LAU boundaries shall be based on site-specific habitat information and after review by the Forest Service Regional Office.	There would be no change to existing LAU boundaries. The alternative is in compliance with	Same as alternative 1.	Same as alternative 1.	Same as alternative 1.

The following objectives, standards, and guidelines apply to human use projects, such as special uses (other than grazing), recreation management, roads, highways, and mineral and energy development, in lynx habitat in lynx analysis units (LAUs) in occupied habitat, subject to valid existing rights. They do not apply to vegetation management projects or grazing projects directly. They do not apply to linkage areas.

Table 74. Objective or guideline for human use (HU) projects by alternative

Objective or Guideline	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Objective HU O1 Maintain the lynx's natural competitive advantage over other predators in deep snow, by discouraging the expansion of snow-compacting activities in lynx habitat.	This project addresses summer travel only. Winter motorized use would not change under this project. Winter recreation is being addressed in a separate project. The alternative is in compliance with Objective HU O1.	Same as alternative 1.	Same as alternative 1.	Same as alternative 1.
Objective HU O2 Manage recreational activities to maintain lynx habitat and connectivity.	No changes to motorized routes or other recreational uses are proposed. Lynx habitat and connectivity would be maintained. The alternative is in compliance with Objective HU O2.	Lynx habitat and connectivity would be maintained or improved. In total, motorized routes would decrease by 58 miles. Roads open to public wheeled motorized use would decrease by 94 miles although motorized trails increase by 36 miles. This alternative includes 0.2 mi of new road and 2 miles of new motorized trail construction. Designated non-motorized trails would increase by 49 miles including 31.5 miles of new construction. Motorized use would be concentrated on already developed routes and 135 miles of roads would be stored and 8 miles decomissioned. The alternative is in compliance with Objective HU O2.	Similar to alternative 2 although a greater reduction in open motorized routes and more seasonal restrictions on motorized trails in particular. In total, motorized routes decrease by 153 miles. Open roads would decrease by 144 miles and motorized trails would decrease by 9 miles. New road construction of 0.2 mi.; 3 miles of new motorized trail; 0.5 miles of road reconstruct. Non-motorized trail construct the same as alternative 2. Greater increase in connectivity than alternative 2 due to stored (76 mi) and decommissioned (200 mi) roads. The alternative is in compliance with Objective HU O2.	Similar to alternative 3 in total motorized routes but longer season of use on motorized trails. In total, motorized routes decrease by 150 miles. Open roads would decrease by 157 miles but motorized trails would increase by 7 miles. New road construction of 0.2 mi.; 4 miles of new motorized trail; 0.5 miles of road reconstruct; relocate 9 miles motorized trail and 3 miles non-motorized trail; new construct 21 miles non-motorized. Increase in connectivity similar to alternative. 3. Increase in stored (82 mi) and decommissioned (212 mi) roads offset by longer motorized use period and Alice creek connector trail.
Objective HU O3 Concentrate activities in existing developed areas,	Activity would be maintained on existing routes only. No new route development would occur. The alternative is in compliance with	Motorized use is largely limited to existing road and trail system. New construction includes 0.2 miles of new road and 2	Motorized use is largely limited to existing road or trail system. Road and trail miles, and associated changes are shown in HU O2. Fewer miles of	Similar to alternative 3. Road and trail miles, and associated changes are shown in HU O2. The miles of open routes on acquired lands would be the

Objective or Guideline	Alternative 1	Alternative 2	Alternative 3	Alternative 4
rather than developing new areas in lynx habitat.	Objective HU O3.	miles of motorized trail along with 31.5 miles of non-motorized trail. Motorized use would be allowed on lands acquired from TNC with 62 miles identified for closure or storage. The alternative is in compliance with Objective HU O3.	motorized use would be allowed on lands acquired from TNC than alternative 2 with 70 miles identified for storage or decommissioning. The alternative is in compliance with Objective HU O3.	same as alternative 3 but only 57 miles identified for storage or decommissioning.
Objective HU O4 Provide for lynx habitat needs and connectivity when developing new or expanding existing developed recreation sites or ski areas.	No new developed sites or ski areas are proposed and connectivity would be maintained at its current level. The alternative is in compliance with Objective HU O4.	No developed recreation sites or ski area are proposed. Motorized use is largely limited to existing routes where no vegetation removal would occur. Overall open route density would decrease. See HU 03 and 04. The alternative is in compliance with Objective HU O4.	Same as alternative 2.	Same as alternative 2.
Guideline HU G3 Recreation developments and operations should be planned in ways that both provide for lynx movement and maintain the effectiveness of lynx habitat.	No new recreational developments or operations would occur and lynx movement and effectiveness of habitat would be maintained. The alternative is in compliance with Guideline HU G3.	The proposed changes shown in HU O2 would not substantially reduce the effectiveness of lynx habitat or preclude movement. There would be no substantial reduction in lynx habitat and forest roads generally do not create barriers to lynx movement. Road closures would reduce motorized disturbances. The alternative is in compliance with Guideline HU G3.	The proposed changes shown in HU O2 would have less impact upon lynx movement and habitat effectiveness than alternative 2. The increase in roads stored or decommissioned closures would further minimize effects and improve habitat connectivity and effectiveness over the long term. The alternative is in compliance with Guideline HU G3.	Similar to alternative 3 in total motorized routes and stored or decommissioned routes as shown in HU O2. The extended motorized use period, trail improvements and the Alice creek connector trail may result in localized increases in motorized use but are not anticipated to substantially affect lynx movements or habitat effectiveness. The alternative is in compliance with Guideline HU G3.
Guideline HU G11 Designated over-the-snow	No changes to winter motorized use are proposed in this project. Winter recreation is being	Same as alternative 1.	Same as alternative 1.	Same as alternative 1.

Objective or Guideline	Alternative 1	Alternative 2	Alternative 3	Alternative 4
routes or designated play areas should not expand outside baseline areas of consistent snow compaction, unless designation serves to consolidate use and improve lynx habitat. This may be calculated on an LAU basis, or on a combination of immediately adjacent LAUs. Use the same analysis boundaries for all actions subject to this guideline.	addressed in a separate project. The alternative is in compliance with Guideline HU G11.			

The following objective, standard, and guidelines apply to all projects within linkage areas in occupied habitat, subject to valid existing rights.

Table 75. NRLMD Linkage Areas (LINK)

Objective, Standard, or Guideline	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Objective LINK O1 In areas of intermingled land ownership, work with landowners to pursue conservation easements, habitat conservation plans, land exchanges, or other solutions to reduce the potential of adverse impacts on lynx and lynx habitat.	Ongoing. In recent years 8,640 acres from TNC (previously Plum Creek lands) were acquired. The alternative is in compliance with Objective Link O1.	Same as alternative 1.	Same as alternative 1.	Same as alternative 1.
Standard LINK S1 When highway or forest highway construction or	No highway or forest highway construction is associated with this project. The alternative is in compliance with Standard LINK S1.	Same as alternative 1.	Same as alternative 1.	Same as alternative 1.

Objective, Standard, or Guideline	Alternative 1	Alternative 2	Alternative 3	Alternative 4
reconstruction is proposed in linkage areas, identify potential highway crossings.				
Guideline LINK G1 NFS lands should be retained in public ownership.	There are no recent or future proposals to decrease NFS ownership within the planning area. The alternative is in compliance with Guideline LINK G1.	Same as alternative 1.	Same as alternative 1.	Same as alternative 1.
Guideline LINK G2 Livestock grazing in shrub-steppe habitats should be managed to contribute to maintaining or achieving a preponderance of mid- or late-seral stages, similar to conditions that would have occurred under historic disturbance regimes.	There would be no change to existing livestock grazing levels or allotments resulting from the proposed action. The alternative is in compliance with Guideline LINK G2.	Same as alternative 1.	Same as alternative 1.	Same as alternative 1.

Cumulative Effects to Lynx

Cumulative impacts include future State, tribal, local or private actions that impact lynx or their habitat. Various State or private activities have spatial or temporal overlap with the proposed action although the majority of State and private lands in the planning area do not support suitable lynx habitat. There are several past and ongoing activities occurring on the National Forest that cumulatively affect lynx and lynx habitat. For a complete list see Appendix D of the FEIS. Some of these activities have or will have positive effects. Road decommissioning projects may serve to reduce habitat fragmentation increasing habitat security and connectivity and some vegetation treatments are expected to improve snowshoe hare habitat benefitting lynx over the longer term. Conversely, the reopening of previously closed roads, relocating roads, and some vegetation management may serve to increase fragmentation and reduce connectivity between suitable habitats.

Vegetation management projects in the planning area include the HNF Roadside Hazard Tree Removal Project which is nearing completion, the proposed Stonewall and Dalton Vegetation Management projects, ongoing Hogum and Poorman prescribed burn projects, and proposed Helmville Face and Alice Creek prescribed burn projects. These projects have been or will be analyzed to address project related direct, indirect and cumulative effects to lynx and will undergo the appropriate section 7 consultation.

Vegetation management can have beneficial, neutral, or adverse effects on lynx and snowshoe hare prey populations, and the duration of effects varies. Some vegetation management practices mimic natural disturbance processes, while other practices, such as use of herbicides to suppress hardwood regeneration, do not. Past vegetation management activities that clear-cut forests temporarily removed both snowshoe hare and red squirrel habitat, thereby reducing lynx prey densities. Timber harvests also regenerate the forest and provide the early successional forests needed by snowshoe hares. Timber harvest may also remove denning and security habitat that require long time periods to regenerate. In association with timber harvest, some level of road construction typically occurs that can facilitate recreational use in lynx habitats that previously received little use.

Considerable timber harvest has also occurred on State and private lands within the action area and future harvest activities are anticipated due to extensive insect mortality. In general, state and private lands within the cumulative effects area occur at lower elevations and provide little suitable lynx habitat. On state lands, less stringent oversight is mandated and these actions can cumulatively impact lynx populations on federal lands. State lands are generally scattered parcels throughout the action area and past and future harvest activities are not anticipated to create barriers or impede lynx movements. While future harvest activities will further reduce forest cover and the abundance of dead trees, the impact from these activities on state and private lands will be minimal due to the small proportion of the action area involved.

The extensive tree mortality, particularly in the lodgepole pine where the greatest insect mortality is occurring, is expected to reduce the short term habitat suitability for lynx and snowshoe hares. Over the longer term of 15-30 years, natural regeneration is expected to provide increased cover and forage for snowshoe hares. The accumulation of down wood will increase the availability of structural components lynx select for denning. The extensive mortality also serves to significantly increase the risk of large scale wildfires that could significantly reduce availability of suitable lynx habitat for 15-40 years.

Climate change is anticipated to influence lynx and lynx habitat with several possible effects of climate change anticipated. These include: (1) potential shifts along elevational or latitudinal gradients in the distribution of the lynx population itself, along with prey species and potential competitors and predators; (2) reductions in overall lynx population size; (3) changes in demographic rates, such as survival and reproduction; (4) changes in co-evolved interactions, such as prey-predator relationships; and (5) direct loss of habitat from changes in forest species composition and changes in the frequency and pattern of forest disturbances (fire, hurricanes, insect outbreaks; McKenzie et al. 2004). The proposed project would not contribute cumulatively to the effects of climate change since it would not remove any substantive levels of forest cover and wheeled motorized use is limited to the non-winter period almost entirely on existing roads and trails.

The Blackfoot-North Divide Winter Travel Plan was implemented in December 2013. In general, snowmobiling primarily occurs on existing roads and trails or in open areas with limited forest cover or associated structural complexity at the ground level. Densely stocked stands, dense regenerating young stands that provide good snowshoe hare habitat, or stands with a high level of dead and down that may provide denning habitat are generally not suitable for snowmobiling. None of the proposed new road or trail construction would occur it areas proposed as winter non-motorized. The Winter Travel Plan proposed action would designated approximately 88,000 acres as winter non-motorized and imposed a winter season of 12/1 through 3/31 for lands north of Highway 200, with the exception of the Copper Bowls play area that would allow use until 5/31. South of Highway 200 the season ending date would be 4/15. Cumulatively, both travel plans would reduce recreational use in the planning area reducing recreational disturbances in lynx habitat.

Domestic grazing occurs on the much of the planning area within several authorized livestock allotments but is not anticipated to cumulatively contribute to project related effects to lynx or lynx critical habitat. The project would not result in any changes to allotment management or stocking levels. Motorized use would remain largely unchanged within allotments and would not increase forage competition between hares and livestock. The presence of livestock during the summer grazing period in conjunction with the limited motorized access would not serve to create barriers or significantly impede the movement of lynx within the action area and habitat connectivity would be maintained.

The existing level of development within the action area is relatively low consisting primarily of developments in lower elevation habitats surrounding the town of Lincoln, as well as other scattered homes and/or ranches. Additional future development is anticipated to continue at a moderate level however, the degree of future development is difficult to predict and is limited by the availability of private land suitable for development. Most private lands are at lower elevations and support dry forest types that do not provide lynx habitat minimizing the potential to cumulatively affect lynx. In general, the action area has a low degree of human development and the extensive forest cover provided by the large contiguous block of public lands provides a high degree of connectivity to allow lynx movements within the action area.

Highways 200 and 279 currently provide the most significant impediment to wildlife movements within the action area and are responsible for multiple wildlife mortalities throughout the year, although there are no known lynx mortalities to date. It is anticipated that traffic volume on these highways will increase in future years as the human population in surrounding areas continues to grow. Correspondingly, since many of the planning areas summer and winter recreationists come from the surrounding areas, it is reasonable to expect some future increase in highway traffic and an increased potential for lynx mortality.

Activities associated with exploration and development of leasable minerals could affect lynx habitat by changing or eliminating the native vegetation and contributing to habitat fragmentation. The development of associated roads, powerlines and pipelines to facilitate exploration and development could result in a loss of lynx habitat and contribute to fragmentation of habitat. Currently, there are no proposals for larger scale exploration or development of leasable minerals within the planning area. There is however, a large reclamation proposal for the Mikehorse Mine at the head of the Blackfoot River. Reclamation activities are anticipated to last several years. Associated activities could increase the risk of highway mortality due to increased traffic and impede lynx movements through the area. Sufficient habitat surrounds the reclamation site however that lynx would not be precluded from traveling between adjacent suitable habitats.

Based on the above discussion and the effects of any of the alternatives analyzed in this document, cumulatively, alternative 1 (the no-action alternative) or the proposed activities in alternatives 2, 3, or 4 would have no significant adverse effects upon lynx. As addressed under direct and indirect effects, the proposed project is in compliance with the applicable objectives, standards, and guidelines of the NRLMD (USDA Forest Service 2007) and no adverse effects to lynx are anticipated.

Lynx Critical habitat

Direct, Indirect, and Cumulative Effects Analysis

Effects to Canada lynx critical habitat were evaluated by assessing potential project impacts to the primary constituent element (PCE) and its four attributes for lynx critical habitat to conserve the physical and biological features necessary to the conservation of lynx (USDI Fish and Wildlife Service, 2009, p. 8638).

The effects analysis area and the cumulative effects area is the Blackfoot travel planning area which represents the action area. This area is sufficiently large that it supports home ranges of several individual lynx and the PCE and its attributes of lynx critical habitat. The project area is bordered by the Scapegoat Wilderness to the north and contiguous forest cover extending south predominantly on FS lands. The east and west sides of the project area are bordered by private lands that do not support suitable lynx habitat.

Alternative 1

The no-action alternative would have no direct or indirect effect upon the vegetative structure or condition of the boreal forest landscape, the primary constituent element of lynx critical habitat. No new trails, parking areas, other improvements or developments would occur under this alternative. Boreal forest habitat would retain its current abundance, distribution, and availability to lynx. The total miles of roads and trails in boreal forest habitat would remain unchanged both temporally and spatially. The effects to winter snow conditions would remain unchanged and current abundance and distribution of snowshoe hares, denning habitat, and matrix habitat would remain unchanged at current levels of availability. Critical habitat would remain functional and maintain current lynx use.

Alternative 2

Boreal Forests **–** Alternative 2 would have no substantive direct or indirect effect upon vegetative structure or condition of the boreal forest landscape. The effect of 2 miles of new trail construction, and trailhead development would result in very little vegetation removal. Other than the new trail development motorized use would be confined to existing roads and trails that would not result in additional vegetation loss. Available information does not suggest that motorized trails have adverse effects to lynx or preclude lynx movement. Boreal forest habitat would retain its current abundance, distribution, and remain functional.

Presence of snowshoe hares – The 94-mile reduction in open routes would reduce motorized use in snowshoe hare habitat. Low levels of traffic on forest roads and low speeds minimize the potential for hare mortality due to motorized use. Hares are also most active at dusk and dawn when motorized use is at its lowest level. The construction of narrow motorized and non-motorized trails would remove minimal vegetation and trails would preclude hare movements or distribution. The effects of non-winter motorized use and other recreational activities on snowshoe hares and hare habitat would not be significant and are discountable.

Winter Snow Conditions – A decision on non-winter travel would have no effect upon winter snow conditions.

Denning habitat – Denning habitat is abundant throughout the project area and is not considered a limiting factor in Montana (USDA Forest Service 2007B). Lynx occupy dens in early May when many forest roads are still impassible by wheeled vehicles due to persistent snow or wet muddy conditions. The minimal reduction in structural components that lynx may use to den due to trail construction would be discountable.

Matrix habitat – Open forest roads would be reduced by 94 miles improving habitat connectivity and the ability of lynx to move upon the landscape. Forest roads and trails do not create barriers to lynx. Roads identified for storage and decommissioning would serve to improve the planning areas ability to function as matrix habitat. Matrix habitat would not be reduced and would remain functional.

Alternative 3

Potential effects of alternative 3 to critical habitat would be similar to those described under alternative 2. Alternative 3 would and have fewer miles of open routes and impose more seasonal restrictions allowing the PCE and its attributes to remain functional. The additional mile of trail and 0.5 mile of new road construction would be offset by the reduction of 153 miles of motorized routes. Work associated with roads identified for storage and decommissioning would not affect denning habitat and over the longer term would improve the ability of adjacent lands to serve as matrix habitat.

Alternative 4

The potential effects of alternative 4 on critical habitat would be similar to those described for alternative 2 although the magnitude would be more similar to alternative 3. The miles of open motorized routes, and miles of road identified for storage and decommissioning are similar among alternatives 3 and 4. Alternative 4 includes additional disturbance associated with an additional mile of new motorized trail construction compared to alternative 3, trail improvements and relocations and, the potential for a connector trail between Alice creek and the acquired block of lands to the east. Alternative 4 would however, construct fewer miles of non-motorized trail and provide fewer miles of mountain bike trail.

Summary of Direct and Indirect Effects to Lynx Critical Habitat

In summary, non-winter motorized use under any of the three alternatives would have minimal impact upon the physical and biological features as described by the PCE and it attributes defined above. The PCE and its attributes represent the essential physical and biological features of boreal forest that (1) provide adequate prey resources necessary for the persistence of local populations and metapopulations of lynx through reproduction; (2) act as a possible source of lynx for more peripheral boreal forested areas; (3) enable the maintenance of home ranges; (4) incorporate snow conditions for which lynx are highly specialized that give lynx a competitive advantage over potential competitors; (5) provide denning habitat; and (6) provide habitat connectivity for travel within home ranges, exploratory movements, and dispersal within critical habitat units.

The proposed activities would not result in significant vegetation changes or connectivity within the action area. Sufficient forest habitat is present to provide cover for lynx movements throughout the action area. Under all alternatives, lynx critical habitat would remain functional (or retain the current ability for the PCE and its attributes to be functionally established) to serve its intended conservation role for lynx.

Cumulative Effects to Lynx Critical Habitat

Cumulative impacts include future State, tribal, local or private actions that impact lynx or result in a direct loss or modification of the PCE and its attributes within the action area. Various State or private activities have spatial overlap with the action area, however few of these activities overlap temporally with the winter use period minimizing the potential to cumulatively impact lynx or their habitat. There are several past and ongoing activities occurring on the National Forest that cumulatively affect lynx and lynx habitat. For a complete list see appendix D of the DEIS. Some of these activities have or will have positive effects. Road decommissioning projects may serve to reduce habitat fragmentation increasing habitat security and connectivity and some vegetation treatments are expected to improve snowshoe hare habitat benefitting lynx over the longer term. Conversely, the reopening of previously closed roads, relocating roads, and some vegetation management may serve to increase fragmentation and reduce connectivity between suitable habitats.

Vegetation management projects in the project area include the HNF Roadside Hazard Tree Removal Project which is nearing completion, the proposed Stonewall and Dalton Vegetation Management projects, ongoing Hogum and Poorman prescribed burn projects, and proposed Helmville Face and Alice Creek prescribed burn projects. These projects have been or will be analyzed to address project related direct, indirect and cumulative effects to lynx and lynx critical habitat and will undergo the appropriate section 7 consultation.

Vegetation management can have beneficial, neutral, or adverse effects on lynx and snowshoe hare prey populations, and the duration of effects varies. Some vegetation management practices mimic natural disturbance processes, while other practices, such as use of herbicides to suppress hardwood regeneration, do not. Past vegetation management activities that clear-cut forests temporarily removed both snowshoe hare and red squirrel habitat, thereby reducing lynx prey densities. Timber harvests also regenerate the forest and provide the early successional forests needed by snowshoe hares. Timber harvest may also remove denning and security habitat that require long time periods to regenerate. In association with timber harvest, some level of road construction typically occurs that can facilitate recreational use in lynx habitats that previously received little use.

Considerable timber harvest has also occurred on State and private lands within the action area and future harvest activities are anticipated due to extensive insect mortality. In general, state and private lands within the cumulative effects area occur at lower elevations and provide little suitable lynx habitat but may serve as lynx matrix habitat. In matrix habitats, activities that change vegetation structure or condition do not adversely affect lynx critical habitat unless they create a barrier or impede movement between patches of foraging habitat and between foraging and denning habitat within a potential home range (USDI Fish and Wildlife Service 2009, p. 8645). On state lands, less stringent oversight is mandated and these actions can cumulatively impact lynx populations on federal lands. State lands are generally scattered parcels throughout the action area and past and future harvest activities are not anticipated to create barriers or impede lynx movements. While future harvest activities will further reduce forest cover and the abundance of dead trees, the impact from these activities on state and private lands will be minimal due to the small proportion of the action area involved.

The extensive tree mortality, particularly in the lodgepole pine where the greatest insect mortality is occurring, is expected to reduce the short term habitat suitability for lynx and snowshoe hares. Over the longer term of 15-30 years, natural regeneration is expected to provide increased cover and forage for snowshoe hares. The accumulation of down wood will increase the availability of structural components lynx select for denning. The extensive mortality also serves to significantly increase the risk of large scale wildfires that could significantly reduce availability of suitable lynx habitat for 15-40 years.

Climate change is anticipated to influence lynx and lynx habitat with several possible effects of climate change anticipated. These include: (1) potential shifts along elevation or latitudinal gradients in the distribution of the lynx population itself, along with prey species and potential competitors and predators; (2) reductions in overall lynx population size; (3) changes in demographic rates, such as survival and reproduction; (4) changes in co-evolved interactions, such as prey-predator relationships; and (5) direct loss of habitat from changes in forest species composition and changes in the frequency and pattern of forest disturbances (fire, hurricanes, insect outbreaks; McKenzie et al. 2004). The proposed project would not contribute cumulatively to the effects of climate change since it would not remove any substantive levels of forest cover and wheeled motorized use is limited to the non-winter period almost entirely on existing roads and trails.

The Blackfoot Travel Plan is currently being developed to address winter recreation in the project area. In general, snowmobiling primarily occurs on existing roads and trails or in open areas with limited forest cover or associated structural complexity at the ground level. Densely stocked stands, dense regenerating young stands that provide good snowshoe hare habitat, or stands with a high level of dead and down that may provide denning habitat are generally not suitable for snowmobiling. None of the proposed new road or trail construction would occur it areas proposed as winter non-motorized. The Winter Travel Plan proposed action would designate approximately 88,000 acres as winter non-motorized and impose a winter season of 12/1 through 3/31 for lands north of Highway 200, with the exception of the Copper Bowls play area that would allow use until 5/31. South of Highway 200 the season ending date would be 4/15. Cumulatively, both travel plans would reduce recreational use in the project area minimizing recreational disturbances in lynx habitat.

Domestic grazing occurs on the much of the project area within several authorized livestock allotments but is not anticipated to cumulatively contribute to project related effects to lynx or lynx critical habitat. The project would not result in any changes to allotment management or stocking levels. Motorized use would remain largely unchanged within allotments and would not increase forage competition between hares and livestock. The presence of livestock during the summer grazing period in conjunction with the limited motorized access would not serve to create barriers or significantly impede the movement of lynx within the action area and habitat connectivity would be maintained. Low elevation allotment lands that do not provide suitable hare habitat would continue to function as matrix habitat.

The existing level of development within the action area is relatively low consisting primarily of developments in lower elevation habitats surrounding the town of Lincoln, as well as other scattered homes and/or ranches. Additional future development is anticipated to continue at a moderate level however, the degree of future development is difficult to predict and is limited by the availability of private land suitable for development. Most private lands are at lower elevations and support dry forest types that do not provide lynx habitat minimizing the potential to cumulatively affect lynx or critical habitat. These lands may however, function as matrix habitat for lynx and future developments may serve as impediments to lynx movements through matrix habitats. In general, the action area has a low degree of human development and the extensive forest cover provided by the large contiguous block of public lands provides a high degree of connectivity to allow lynx movements within the action area. The combined effects of summer and winter recreation and additional future development are not anticipated to appreciably contribute to the degradation of lynx matrix habitat or other PCE attributes.

Highways 200 and 279 currently provide the most significant impediment to wildlife movements within the action area and are responsible for multiple wildlife mortalities throughout the year, although there are no known lynx mortalities to date. It is anticipated that traffic volume on these highways will increase in future years as the human population in surrounding areas continues to grow. Correspondingly, since many of the project areas summer and winter recreationists come from the surrounding areas, it is reasonable to expect some future increase in highway traffic and an increased potential for lynx mortality.

Activities associated with exploration and development of leasable minerals could affect lynx habitat by changing or eliminating the native vegetation and contributing to habitat fragmentation. The development of associated roads, powerlines and pipelines to facilitate exploration and development could result in a loss of lynx habitat and contribute to fragmentation of habitat. Currently, there are no proposals for larger scale exploration or development of leasable minerals within the project area. There is however, a large reclamation proposal for the Mikehorse Mine at the head of the Blackfoot River. Reclamation activities are anticipated to last several years. Associated activities could increase the risk of highway mortality due to increased traffic and impede lynx movements through the area. Sufficient habitat surrounds the reclamation site however that lynx would not be precluded from traveling between adjacent suitable habitats.

Based on the above discussion and the effects of any of the alternatives analyzed in this document, cumulatively, alternative 1 (the no-action alternative) or the proposed activities in alternatives 2, 3, or 4 would have no significant adverse effects upon lynx, lynx critical habitat, or population viability. As addressed under direct and indirect effects, the proposed project is in compliance with the applicable objectives, standards, and guidelines of the NRLMD (USDA Forest Service 2007) and no adverse effects to lynx are anticipated. Similarly, the effects of the proposed activities to lynx critical habitat are anticipated to be insignificant and would not appreciably contribute to cumulative impacts upon lynx or critical habitat.

Compliance with Management Direction

The proposed action is in compliance with applicable wildlife standards, guidelines and direction of the Forest Plan (1986) and is consistent with management guidance in the Northern Rockies Lynx Management Direction (USDA Forest Service 2007), and Section 7 of the ESA (1973).

Determination of Effects

It is the determination of this analysis that the proposed project under all alternatives "may affect- not likely to adversely affect lynx or lynx critical habitat."

None of the alternatives would result in significant effects to lynx critical habitat based on the following rationale: (1) lynx currently exists in the planning are under the existing condition that has the highest open road densities and longest season of use; (2) Each of the action alts would reduce the total miles of motorized routes and; (3) human activity would largely be concentrated in areas already impacted by summer recreational use with the exception of recently acquired lands and the reopening of some currently closed roads or trails; (4) minimal new trail and road construction would occur; (5) proposed activities would not result in any substantive changes to the existing vegetative condition; (6) road closures and decommissioning of roads would reduce motorized use in lynx habitat; (7) lynx habitat connectivity would be maintained or enhanced; and (8) the affected critical habitat would remain functional (or retain the current ability for the PCE and its attributes to be functionally established) to serve its intended conservation role for the species.

Sensitive Species

Gray Wolf

General Effects of Roads to the Gray Wolf

Wolves may use the same den sites from one year to the next or maintain several dens in a local area through which they cycle over the years (USDI 1987). Packs are sensitive to human activity near den sites and they may move if disturbed (Ballard et al. 1987). Most dens are located well away from trails and backcountry campsites. Rendezvous sites are specific resting and gathering areas that wolves use in summer and early fall. Wolves move to several rendezvous sites in the course of a summer, the first one is usually located 1 – 6 miles from the natal den. Packs use rendezvous sites until pups are mature enough to travel with the adults. Wolves are most sensitive to disturbance at the first rendezvous site and become less so at later sites (USDI Fish and Wildlife Service, 1987).

The Wolf Recovery Plan (USDI Fish and Wildlife Service 1987) recognized den and rendezvous sites as significant components of wolf habitat to be protected from human interference. Based on U.S. Fish and Wildlife Service recommendations, the HNF routinely proposes that known wolf dens on the Forest be buffered from any local project (or recreational activity) by at least at least ½ mile during the denning season. Rendezvous sites are more ephemeral and mobile, but any such sites that can be identified are also buffered from human presence as much as possible while they are active.

Wolves prey primarily on ungulates (ibid.). During May and June, wolves focus on newborn deer, moose, elk, and bison in calving/fawning areas. In summer and fall, ungulates constitute the highest percentage of biomass; in winter wolves prey almost exclusively on deer, elk, and moose (although livestock may figure into the mix in ranchland areas). Because ungulates represent the bulk of the wolf's food supply, factors that affect ungulate distribution and abundance (habitat and access management, winter range productivity) also affect wolves.

Roads have not been identified as a component directly affecting the recovery and viability of wolf populations in the northern Rockies. The presence of roads on the landscape, however, is associated with indirect effects that can put pressure on wolves. These include the effect that roads have on the local abundance and distribution of ungulate populations upon which wolves depend for food; greater potential for human interference at significant sites, such as dens; and the loss of space free from regular human presence in general. Other indirect effects are the potential for mortality associated with vehicle accidents and illegal shooting that roads facilitate (Theil 1985; Mech 1989; Mech et al. 1988; Boyd and Pletscher 1999).

Direct and Indirect Effects - Alternative 1

There is one known denning site within the project area, located in a remote area with no access. Denning sites of known packs are located and monitored by MFWP each year and the information passed on to the HNF so that adjustments to activities on the Forest, including travel management, can be made to protect denning sites while they are active. As a result, retention of the status quo in alternative 1 would have no effect on these key sites.

Alternative 1 would have no effect on wolf prey base in the Blackfoot landscape. Retention of the existing condition would not imperil the ungulate prey base for current and future wolf packs.

The current open road density in the Blackfoot travel planning area is 1.4 mi/mi². Wolf packs have run into trouble confronting human enterprises (notably livestock operations) almost entirely on private lands away from the National Forest. But on the National Forest, wolves have seldom, if ever, been involved in negative encounters with humans.

Direct and Indirect Effects - Alternatives 2, 3, and 4

Wolves are not impeded or repelled by most Forest roads, and, in fact, they often use primitive roads with low traffic volume as travel ways any time of year. Wolves are also attracted to road corridors that focus prey activity—as when deer graze roadside green-up or rabbits concentrate in roadside brush. On the other hand, some studies have worked out road density thresholds above which wolf pack activity is suppressed. In Minnesota and Wisconsin, average threshold road density was determined to be 0.72 mi/mi² (Mladenoff et al. 1995 cited in Forman et al. 2003). Whether or not this density applies to montane National Forest System roads in the West has not been determined. But given the facility with which wolf packs have made use of ranchlands and well-roaded portions of the HNF in the last 15 years (open road density in the Blackfoot travel planning area is 1.3 mi/mi²), it seems likely that, at least in parts of their territories, wolves are able to deal with road densities higher than the Wisconsin thresholds. Open road density under alternative 2 is 1.1 mi/mi²; under alternative 3 it is .92 mi/mi²; and under alternative 4 it is .93 mi/mi², so the density decreases from alternative 1(current condition) to alternative 3, but alternative 4 is slightly higher than alternative 3 by 0.1 mile.

Few roads on the HNF allow vehicle speeds high enough to threaten wolves. Roads may also be indirectly lethal in that they funnel hunters and other Forest users with rifles into areas occupied by wolves, leading to inadvertent or deliberate shooting. So far, however, neither strikes on the highway nor illegal/accidental shooting have been significant road-related factors in wolf mortality on the HNF since wolves began arriving in this area in the late 1980s.

Any action alternative is highly unlikely to have an effect on established denning or rendezvous sites. There is one known denning site within the project area, no new access under either alternative is proposed within a mile of the site. The changes in the availability of habitat in which wolves might establish dens and carry on with other activities on the Forest away from regular human presence would be relatively small under any action alternative and would have no measurable effect on wolf population viability.

Road systems facilitate hunting opportunity, and access management can directly influence ungulate harvest rates but overall population numbers are a direct result of hunter success. In this regard, the degree to which hunters are able to access off-Forest lands where elk often seek refuge during the hunting season would also affect elk numbers. Block management agreements and State land purchases will drive this access. Any action alternative would allow elk to continue inhabiting the Plan Area at least at current population levels, thereby assuring a prey base for resident and transient wolves.

All action alternatives would increase the total acreage of large non-motorized habitat patches expanding the areas in which wolves can establish new dens and carry on with other activities away from regular human interference. But, the effects, in terms of their contribution to wolf population viability, are unlikely to be measurable.

Population increases could result, however, from a combination of improved elk habitat effectiveness and security on the Forest, and lower harvest rates resulting from more restrictive hunting regulations via MFWP. Most likely, under any action alternative, elk would continue inhabiting the Blackfoot travel planning area at something close to present population levels, maintaining an adequate prey base for resident and transient wolves.

Cumulative Effects Common to the Gray Wolf, for All Alternatives

Recent and ongoing activities on the National Forest that have improved prospects for wolves include: Establishment of the Statewide OHV Plan, which prohibits riding off established motor routes, thus reducing potential for negative wolf/human encounters; grazing allotment revisions that have generally reduced cattle numbers and grazing seasons, thus improving habitat conditions for big game species while at the same time reducing potential for wolf-livestock interaction on the Forest; road and motor trail closures associated with timber harvest projects that have expanded blocks of non-motorized habitat and potentially reduced opportunity for negative wolf/human encounters; trail relocation projects that have removed trails from riparian areas to upslope locations away from sites more likely to attract wolves and their prey.

There are several past and ongoing activities occurring on the National Forest that affect general forested habitat. Some of these activities have or will have positive effects. For a complete list see appendix D. These include road decommissioning projects and some vegetation treatments that reduce fragmentation and edge effects. Overall reforestation projects are expected to be beneficial. Other activities may exacerbate fragmentation and edge effects as well as direct habitat loss. These include reopening previously closed roads, relocated roads, and some vegetation management. Vegetation management projects include HNF hazard tree removal, Poorman burn, and proposed Stonewall and Dalton vegetation management, Helmville Face, and Alice Creek burning project. Project specific analysis addresses direct, indirect and cumulative effects.

Activities that have locally increased the likelihood of wolf-human encounters include: numerous road permits allowing access across HNF land to private holdings; retention of private recreational residences on HNF land; small mining operations (under the 1872 Mining Act) in areas where wolves have been observed; construction and maintenance of communications sites and power lines; efforts to spread livestock distribution across allotments, which may bring cattle into areas where they are more vulnerable to wolf predation; retention of grazing allotments on the Forest in general providing ongoing potential for wolf predation; retention of numerous dispersed camping sites; unrestricted back-country recreational use (backpackers, day-hikers, horseback riders, hunters).

Private land development (primarily rural home building) is continuing to create more sites that prove troublesome for wolves moving through the landscape (bringing them into contact with human habitation, domestic animals, and residents with guns). Ranching operations on private lands near the Forest have proven to have high potential for wolf-human conflict. Wolves inevitably descend to private ranch and agricultural lands in the valleys as winter comes on, and, sometimes, they remain there yearlong. A circumstance that may, in part, be related to elk coming down off the Forest in early to mid-fall to avoid hunters, and remaining in the valley lands for up to 8 months.

Summary and Determination of Effects

Alternatives 1, 2, 3, and 4

Effects are described in terms of parameters that threaten wolves through (1) human contact and conflict (primarily, livestock grazing, human settlement in the wildland urban interface, and (2) activities that compromise denning or rendezvous sites, and (3) activities that affect the prey base. These follow the three significant components of wolf habitat identified in the Wolf Recovery Plan (USDI Fish and Wildlife Service, 1987): Viable denning and rendezvous sites, adequate prey, freedom from human interference. Under all alternatives, this project “may impact individuals or habitat, but would not likely contribute to a trend towards federal listing or loss of viability to the population or species.”

Fisher

General Effects of Roads to the Fisher

Like wolverines, fishers are not averse to crossing roads and motor trails or using them as travel routes in winter as long as they are associated with mature forest cover. Overall, research has revealed no consistent relationship, positive or negative, between fisher habitat use and open road density. High-traffic roads that run along forested stream bottoms probably reduce the attractiveness of otherwise suitable sites for birthing and raising young but they do not seem to prohibit use of the areas for hunting and resting. Several authors recommend against construction of loop routes in riparian areas, since these tend to encourage human traffic in general and trappers in particular (see Heinmeyer and Jones 1994; Claar et al. 1999).

Fishers do not necessarily avoid roads and areas of human settlement, but the loss of suitable forest habitat that often accompanies these developments has been a primary reason for population decline (Heinemeyer and Jones 1994). Habitat loss and lessened habitat effectiveness in riparian areas is especially detrimental. Even in areas unaffected by timber harvest or clearing for building, firewood cutters typically remove most large snags from open road corridors, eliminating a significant habitat component of potential use to fishers. Another problem has been trapping—often abetted by roads and other access channels for trappers on over-snow vehicles. Fishers are wide-ranging, curious, and opportunistic, and thus highly susceptible to trapping.

Even in areas where quotas are minimal or where fishers are off-limits to trapping, they are caught incidentally in sets for other species (Jones 1991).

As is the case with lynx and wolverines, one of the primary threats that open roads pose to fishers comes from their role as over-snow vehicle routes for trappers in winter. Fishers are curious and opportunistic, and they are prone to being caught in traps set for marten and other furbearers, as well as for themselves (Douglas and Strickland 1987). In some areas, this is a significant source of mortality, especially where over-snow vehicle routes pass through forested riparian bottoms, old-growth stands, and forested saddles (Heinmeyer and Jones 1994). Removal of large snags from the road corridor by firewood cutters is another indirect effect—although its import is related to the availability of such components elsewhere in the landscape. Fishers use cavities in dead trees for resting, concealment, and protection of young.

Paved roads generally have higher speed limits than non-paved roads and are thus a higher potential source of vehicle-caused mortality to fishers (Naney et al. 2012). Forest roads and trails may be frequently used as travel and hunting corridors by potential fisher predators (e.g. mountain lions, black bears), which may increase vulnerability of fishers to predation (Naney et al. 2012).

Evidence from radio telemetry studies of fishers suggests that fishers are not displaced from suitable habitat by the presence of roads or road use (USDI Fish and Wildlife Service 2011). However, highways and other roads do increase the potential for vehicle-wildlife collisions and hence fisher mortality. Additionally, higher road/over-snow vehicle track densities in fisher habitat may lead to increased accessibility for trappers, making fishers in these areas more susceptible to trapping.

Direct and Indirect Effects - Alternative 1

Alternative 1 would retain the current configuration of motor routes including 446 miles of roads open to wheeled vehicles on public land (and thus, open to firewood cutters). Trapping access to potential fisher habitat (primarily, patches of riparian forest) would remain at its current level. Trapping activity in the Blackfoot landscape is variable from year to year, but generally low. This, combined with the rarity of fishers in the landscape, has resulted in no fishers being caught in recent decades. The potential for fisher mortality via trapping, as facilitated by the road/trail network, would remain slight.

Direct and Indirect Effects, - Alternatives 2, 3, and 4

With alternative 2, open road miles on public land would decrease by 94 miles from 446 to 352 miles, under alternative 3 open road miles would decrease by 139 miles down to 302 miles, and under alternative 4 open road miles would decrease by 157 miles down to 289 miles. The area from which firewood cutters would be able to remove large snags and logs that might be useful to fishers would thus be decreased substantially under alternative 4 and somewhat less under alternative 3. This would decrease trapper access to a variety of habitats, including a limited amount of potential fisher habitat. Alternative 3 has the shortest season of use dates on certain roads, compared to all the other alternatives. This would also benefit fisher by decreasing disturbance. Table 76 shows the acres affected by new mountain bike trail and road construction broken up by summer and winter habitat ranges. Both summer and winter habitat within the planning area equals approximately 199,510 acres so all alternatives would have an insignificant effect on either habitat.

Under all action alternatives 0.91 miles of road would be decommissioned within fisher habitat. The new construction would be of minimal disturbance and the decommissioning would be beneficial.

Table 76. Acres of summer and winter fisher habitat affected by new mountain bike trail and road construction

Fisher Habitat	Alternative 2	Alternative 3	Alternative 4
Summer habitat acres affected by road/trail construction	0.8	0.8	1.0
Winter habitat acres affected by road/trail construction	1.8	2.7	6.9
Summer habitat acres affected by new mtn bike trail construction	0.9	0.9	0.5
Winter habitat acres affected by new mtn bike trail construction	20.9	20.9	12.8
Total acres	**24.4**	**25.3**	**21.2**

Cumulative Effects Common to the Fisher, for All Alternatives

Past, present and reasonable foreseeable activities in and adjacent to the project area which may impact fisher habitat are and include: timber harvest, recreational use, general development, prescribed fire, and road building. These activities likely reduced fisher habitat quality within the project area and also subjected the species to increased trapping pressure.

Past timber harvest in the Blackfoot landscape, has removed mature and old-growth forest capable of providing fisher habitat (in particular, mid- low-elevation riparian forest). Actions that have improved prospects for fishers include: closure of roadless areas to over-snow vehicle use; trail relocation projects that have removed trails from productive riparian areas to upslope locations; establishment of the Statewide OHV Plan, which prohibits riding off established motor routes; road and motor trail closures associated with timber harvest that have expanded blocks of non-motorized habitat.

Recent and ongoing private land development (building construction, clearing, thinning, commercial timber harvest, dead tree salvage) would continue to impact potential fisher habitat, particularly where it occurs in forested riparian areas. Actions that reduce significant habitat components (large snags and logs, overhead cover) could have an effect.

Trapping, increased road access, and extensive clearcutting (especially in riparian areas) all likely contributed to fisher population declines across the western U.S. Fishers were released in some areas of western Montana around 1959 and 1988 through 1991 to augment nearly extinct populations (Powell and Zielinski 1994). Montana Fish Wildlife and Parks regulates trapping, but fishers remain vulnerable to trapping pressure. The decreasing use of clearcutting and riparian harvest may have stabilized the amount of fisher habitat in Montana.

Recent and ongoing travel planning efforts on adjacent Forests, as well as the Lincoln Ranger District, could be beneficial to fishers if they provide local safe havens free from motorized access. Because fishers are capable of traveling some distance, improved habitat conditions on other Forests could improve fisher populations and subsequent dispersal opportunities to the Helena National Forest. Conversely, travel management decisions elsewhere could reduce fisher populations in those areas and reduce the potential for emigration/immigration.

Reasonably foreseeable activities on HNF land that could affect fishers to one degree or another include salvage projects designed to deal with the ongoing bark beetle epidemic which would remove substantial numbers of large dead trees, some of which could be of use to fishers.

There are several past and ongoing activities occurring on the National Forest that affect general forested habitat. Some of these activities have or will have positive effects. For a complete list see appendix D. These include road decommissioning projects and some vegetation treatments that reduce fragmentation and edge effects. Overall reforestation projects are expected to be beneficial. Other activities may exacerbate fragmentation and edge effects as well as direct habitat loss. These include reopening previously closed roads, relocated roads, and some vegetation management. Vegetation management projects include HNF hazard tree removal, Poorman burn, and proposed Stonewall and Dalton vegetation management, Helmville Face, and Alice Creek burning project. Project specific analysis addresses direct, indirect and cumulative effects.

The proposed Dalton and Stonewall vegetation management projects would result in reductions of forest canopy (small-to medium-sized trees) and down woody material, adding to the impacts from past activities. However, these alternatives would retain down woody material as directed by the Forest Plan and mitigation measures for soils and watershed. In addition, the action alternatives would only include regeneration harvest using small patches of group tree selection within larger improvement cut units so the forested nature of treated stands would be maintained.

Finally, the overall reduction in road density following project completion would be beneficial to fisher and other species that are subject to trapping pressure.

Summary and Determination of Effects

Alternative 1

Because this alternative would not change the existing vegetative condition on the project area or change existing road densities it would have “no impact” on fisher.

Alternatives 2, 3, and 4

It is the determination of this analysis that the proposed activities under all action alternatives “may impact individuals or habitat, but would not likely contribute to a trend towards federal listing or loss of viability to the population or species.” This determination is based on the following rationale: even though fisher are extremely rare in the planning area, suitable habitat still exists and because fishers are capable of traveling some distance, improved habitat conditions on other Forests could improve fisher populations and subsequent dispersal opportunities to the Helena National Forest. The action alternatives would result in a decrease of open road density across the planning area, and trappers and woodcutters would have fewer opportunities to access areas.

Wolverine

Direct and Indirect Effects - Alternative 1

There would be no direct loss of wolverine habitat since no vegetative modifications would occur. No additional actions such as opening additional roads or trails to motorized use, new road or trail construction or use of historic roads is proposed with this alternative so there would be no direct or indirect effects on wolverines or their habitat.

Although wolverine habitat is characterized primarily by spring snowpack, the absence of human presence and development has also been used to characterize wolverine habitat (Hornacker and Hash 19981p. 1229; Copeland 1996; Krebbs et al. 2007). The negative association with human presence has been interpreted as active avoidance of human disturbance; it may simply reflect the wolverine's preference for cold, snowy, high-elevation habitat that humans generally avoid (USDI Fish and Wildlife Service, 2013). Modeled wolverine denning habitat occurs in high elevation areas primarily within the Scapegoat Wilderness, lands along the southern boundary of the wilderness, and along the continental divide. The majority occurs in the northern half of the project area with the greatest concentration within the Scapegoat Wilderness.

Road and rail kill is another important source of human-caused mortality. Human land-use activities have affected wolverine populations, mostly those activities that fragment or supplant habitat (for example, human settlement, extensive logging, and recreational developments) (Banci 1994)). In British Columbia, a study of the effects of transportation corridors showed wolverine to avoid areas within 100 m of the TransCanada Highway (Austin 1998). In the same study wolverines frequently used sparsely-used ski trails for travel; but levels of human activity that may discourage use by wolverines are unknown (Austin 1998).

To date, no wolverine den sites have been verified in the planning area. However, recent information collected by Wild Things Unlimited, and other documented occurrences suggest reproductive denning has been occurring within the planning area under the existing condition.

Direct and Indirect Effects - Alternatives 2, 3, and 4

This project would have insignificant effects on wolverine and their habitat under any alternative because: no structural changes to habitat would result, and ungulate densities would remain unchanged. The decreases in road densities under the action alternatives would likely be beneficial to this species and to trapped and hunted species in general. None of the alternatives poses significant risk to wolverine population viability on the Helena NF. Table 77 below shows 10.5 miles of existing roads and trails within wolverine habitat. Under alternative 2 and 3, 5.2 miles of the existing mileage, and 5.3 miles under alternative 4 would be designated as non-motorized trails or road closed to motorized use; also under alternative 3 and 4, an additional 2.6 miles would be designated as non-motorized trail foot and stock only, and another 0.2 miles would be decommissioned within wolverine denning habitat. Alternative 3 has the shortest season of use dates on various roads and trails, compared to all the other alternatives. This would benefit wolverine by decreasing human disturbance. As studies of wolverine are few and inconclusive, it is difficult to determine the exact effects past management actions have had on wolverine within the planning area. In general, it is recognized that remote unroaded areas provide better wolverine habitat than roaded areas receiving consistent human use.

Although wolverines are not widely reported to be a habitat specialist, habitat loss and alienation are commonly thought to be a major contributing factor to population declines (Banci 1994). Based upon the location of denning habitat and Schwartz's finding that wolverines are 20 times more likely to stay in the area of persistent spring snow during dispersal (Schwartz et al. 2009), it is unlikely that wolverines would travel through the planning area during the time that road decommissioning would be occurring under alternatives 3 or 4. Rather, they are likely to travel the high elevation ridges to the north of the planning area in the Scapegoat Wilderness.

Table 77. Road or trail mileage and designation per alternative within wolverine denning habitat in planning area

Road or Trail Number	Road or Trail Mileage within Wolverine Denning Habitat	Alternative 1 Road or Trail Designation	Alternative 2 Road or Trail Designation	Alternative 3 Road or Trail Designation	Alternative 4 Road or Trail Designation
U-447, 771-A3, 485	4.3	Motorized	Non-motorized	Non-motorized	Non-motorized
4106-H3	0.3	Closed to motorized use	Non-motorized	Non-motorized	Non-motorized
330-B1	0.6	Road closed to motorized use yearlong	Road closed to motorized use yearlong	Road closed to motorized use yearlong	Road closed to motorized use yearlong
330-B1	0.1	Open Hwy legal	Open Hwy legal	Open Hwy legal	Road closed to motorized use yearlong
771-A1	0.1	Closed to motorized use 9/1-6/30	Closed to wheeled motorized use 9/1-6/30	Decommissioned	Decommissioned
771-A1	2.4	Closed to wheeled motorized use 9/1 -6/30	Closed to wheeled motorized use 9/1 -6/30	Closed to wheeled motorized use 9/1 -6/30	Closed to wheeled motorized use 9/1-6/30
482	1.3	Non-motorized	Non-motorized	Non-motorized trail foot and stock only	Non-motorized trail foot and stock only
483	1.3	Non-motorized	Non-motorized	Non-motorized trail foot and stock only	Non-motorized trail foot and stock only
771-A2	0.1	Closed to wheeled motorized use 9/1 -6/30	Closed to wheeled motorized use 9/1 -6/30	Decommissioned	Decommissioned
Total	**10.5**				

Under all the action alternatives, there is the least potential to effect wolverine dispersal and habitat connectivity during the non-winter period. Although motorized vehicle use may have some influence on wolverine movements, wolverines continue to use the planning area throughout the year under the existing condition as supported by known occurrences and wolverine tracking efforts. Schwartz et al. (2009) found that wolverines are 20 times more likely to stay in the area of persistent spring snow during dispersal. Wolverine year-round habitat use also takes place in the area defined by deep persistent spring snow (Copeland et al. 2010, pp. 242-243).

Wolverines are known to occur in areas of heavy recreational use including dispersed summer and recreation use (USDI Fish and Wildlife Service 2013). Therefore it is not anticipated that any action alternative would appreciably affect wolverine habitat or individuals.

Cumulative Effects Common to the Wolverine, for All Alternatives

The most far-reaching effect of past management activities has been the development of road systems, recreational trails, and sites that improved access and promoted human use in remote areas. Snowmobile use and motorized wheeled vehicles have reduced the remoteness of the pre-managed landscape. New technology has continually increased their capabilities allowing greater access to remote areas even in the absence of established roads or trails. Management activities such as clearcuts and extensive thinning and the associated roads have provided additional opportunities for access both spatially and temporally. Natural disturbances such as the 34,000 acre 2003 Snow Talon fire may also serve to increase access in some areas by removing down wood and understory vegetation. As burned trees fall over time and vegetative recovery progresses access again becomes more restrictive to motorized use.

As studies of wolverine are few and inconclusive, it is difficult to determine the exact effects past management actions have had on wolverine and habitat suitability within the planning area. Suitable wolverine habitat continues to exist within the planning area based upon known documented occurrences of wolverine presence and activity. In general, research suggests that remote unroaded areas provide more suitable wolverine habitat than roaded areas receiving consistent human use. As noted in the listing proposal (USDI Fish and Wildlife Service 2013) association with remote habitats may be more closely tied to wolverine habitat preference that includes high elevation areas that retain late season snows. These habitats are typically located in remote areas with limited human use.

While human disturbance in wolverine habitat has likely resulted in some minor loss of habitat little is known about the behavioral response of individual wolverines to human presence or about the species ability to tolerate and adapt to repeated human disturbance (USDI Fish and Wildlife Service 2013). It has been speculated that disturbance may reduce the wolverine’s ability to complete essential life-history activities, such as foraging, breeding, maternal care, routine travel, and dispersal (Packila et al. 2007, pp. 105-110). However, wolverines have been documented to persist and reproduce in areas with high levels of human use and disturbance including developed alpine ski areas and areas with snowmobile use (Heinenmeyer 2012). This suggests that wolverines can survive and reproduce in areas that experience human use and disturbance (USDI Fish and Wildlife Service 2013).

The USFWS concluded that the greatest threat to wolverine is continued loss of habitat due to climate change. Climate changes are predicted to reduce wolverine habitat and range by 31 percent over the next 30 years and 63 percent over the next 75 years, rendering remaining wolverine habitat significantly smaller and more fragmented (USDI Fish and Wildlife Service 2013). While wilderness and roadless lands will continue to provide abundant, high quality habitat for wolverines in the short-term, climate change will continue to be a threat to wolverine populations in the long-term and is likely to shrink the size of their high quality habitat islands. The northern Rocky Mountains will continue to provide some of the largest, most contiguous areas of wolverine habitat in the lower 48 states, serving as a population source area (USDI Fish and Wildlife Service 2013).

The Service concluded that habitat change and loss due to climate change alone, warrants proposing the wolverine DPS for listing under the Endangered Species Act. Other factors such as human use and disturbance, dispersed recreational activities, infrastructure development, transportation corridors, and land management are not as severe or geographically comprehensive as the potential habitat effects from climate change. The Service noted that these factors may, when considered in the context of changes likely to occur due to climate change, become threats due to the cumulative effects they have on wolverine populations. In their analysis, the Service found the only such threat factors having a basis of support as threats to wolverines were the effects of small subpopulation sizes and subpopulation isolation on wolverine genetic and demographic health, and the subsequent potential future influence of trapping. Human activities like dispersed recreation, land management activities by federal agencies and private landowners, and infrastructure development occur at a relatively small scale compared to the average size of wolverine's home range which serves to minimize potential cumulative effects.

Dispersed recreation like snowmobiling and back country skiing, and warm season activities like backpacking and hunting, occur over larger scales; however, there is little evidence to suggest that these activities may affect wolverines significantly or have a significant effect on conservation of the DPS. Preliminary evidence suggests that wolverines can coexist amid high levels of dispersed motorized and non-motorized use (Heinenmeyer et al. 2012, entire), possibly shifting activity to avoid the most heavily used areas within their home ranges. The Service does not consider most activities occurring within the high elevation habitat of the wolverine, including snowmobiling and backcountry skiing, and land management activities like timber harvesting and infrastructure development, to constitute significant threats to the wolverine. As a result, the Service is proposing a special rule under Section 4(d) of the ESA that, should the species be listed, would allow these types of activities to continue.

The planning area is bisected by two single lane highways. While these highways may deter some wolverine movements, available research does not indicate that single lane highways present barriers to wolverine movements. Similarly, the proposed reconstruction of a portion of Highway 200 east of Lincoln is not anticipated to result in improvements that would create barriers to wolverine movements. Past and future forest road management actions that improve security habitat for grizzly bears and big game species also provide secure habitat for wolverine movements. The Blackfoot Winter Travel Plan is also currently being developed as a separate project and it is anticipated that addresses habitat security and connectivity will be maintained or enhanced.

Other ongoing and foreseeable management actions (e.g. tree planting, timber harvest, thinning, gathering forest products, road maintenance and developed recreation activities, etc.) in the cumulative effects analysis area are not expected to adversely affect wolverines because they do not overlap in space with areas of persistent spring snowpack. Dispersed recreation activities occur throughout the cumulative effects analysis area and are located in areas of persistent spring snowpack, but there is no evidence that dispersed recreation activities such as hiking, camping, and hunting affect wolverines. According to the 12-month review, "It is clear that wolverines can coexist with some level of human disturbance and habitat modification. According to the 12-month review, "It is clear that wolverines can coexist with some level of human disturbance and habitat modification. What little information exists suggests that wolverines can adjust to moderate habitat modification, infrastructure development, and human disturbance" (USDI Fish and Wildlife Service 2013, pg. 78049)

In summary, the best scientific and commercial information available indicates that only the projected decrease and fragmentation of wolverine habitat or range due to future climate change is a threat to the species now and in the future. The available scientific and commercial information does not indicate that other potential stressors such as land management, recreation, infrastructure development, and transportation corridors pose a threat to the DPS (USDI Fish and Wildlife Service 2013).

In addition, the USFWS review of the regulatory mechanisms in place at the national and State level concluded that the short term, site-specific threats to wolverine from direct loss of habitat, disturbance by humans, and direct mortality from hunting and trapping are, for the most part, adequately addressed through state and federal regulatory mechanisms. They stated that federal ownership of much of occupied wolverine habitat protects the species from direct losses of habitat and provides further protection from many of the forms of disturbance. Wolverines can use habitats affected by moderate levels of human disturbance, and additional protection is afforded wolverines by the significant portion of their range that occurs in designated wilderness and national parks. Cumulatively, these other threats may act in concert with the primary threat of future climate change to threaten wolverine populations. Therefore, the USFWS concluded it is appropriate to view them as secondary threats to the wolverine DPS (USDI Fish and Wildlife Service 2013).

Determination of Effects

The wolverine is now a proposed threatened species, per the findings of the USDI Fish and Wildlife Service, 50 CFR Part 17 , 78 FR 7864, Endangered and Threatened Wildlife and Plants; Threatened Status for the Distinct Population Segment of the North American Wolverine Occurring in the Contiguous United States, dated February 4, 2013, found at http://federalregister.gov/a/2013-01478.

Wolverines and/or wolverine habitat exist in the planning area based on photo documentation, DNA analysis and track surveys conducted by Wild Things Unlimited, USFS Southwest carnivore survey crews, past trapping records, and modeled denning habitat based on persistent snow layers. Potential wolverine denning habitat is most abundant within the Scapegoat Wilderness and lands along its southern boundary, and along the continental divide.

The project was analyzed for effects to wolverines based on vegetation changes, movements across the landscape, and disturbance from other human activities associated with non-winter travel. It is determined that implementation of the no action alternative or any of the action alternatives will “Not Jeopardize” the wolverine. This determination is based on the following rationale, consistent with the findings of the proposed rule.

- The proposed rule states: “We know of no examples where human activities such as dispersed recreation have occurred at a scale that could render a large enough area unsuitable so that a wolverine home range would be likely to be rendered unsuitable or unproductive. Given the large size of home ranges used by wolverine, most human activities affect such a small portion that negative effects to individuals are unlikely. These activities do not occur at a scale that is likely to have population-level effects to wolverine. The available scientific and commercial information does not indicate that other potential stressors such as land management, recreation, infrastructure development, and transportation corridors pose a threat to the DPS.”
- At the Forest scale, key wolverine habitat is protected by wilderness, roadless designation, and other access management restrictions. At the Region 1 scale, over 73 percent of modeled wolverine denning habitat is protected within the Bob Marshall Wilderness complex and Mission Wilderness, with additional habitat in Glacier National Park providing connectivity to Canada. Therefore, while climate change and other activities outside of Forest Service control may impact wolverines or their habitat, there would be no additive effects from this project that would jeopardize species viability.

- No new developments would occur and no vegetative loss or structural changes to habitat would result under any of the alternatives.
- The greatest abundance and concentration of wolverine denning habitat is primarily located within the Scapegoat Wilderness, which is outside the planning area.
- The action alternatives impose season ending dates that would further reduce overlap of non-winter motorized use during April and May, the critical time period for wolverine reproductive denning.
- Ungulate distribution and abundance would remain unchanged under all alternatives with use restricted to designated routes within big game winter range. Designated routes remain unchanged among the action alternatives.
- Under all alternatives, roadless areas, RNAs, and wilderness occur within and adjacent to the planning area providing suitable denning, dispersal, and security habitat.

Flammulated Owl

General Effects of Roads to the Flammulated Owl

Flammulated owls are small raptors, active primarily from dusk to dawn. McCallum (1994) observes that they appear quite tolerant of humans. In the northern Rockies, they will nest, roost, and forage close to houses and to open roads and well-used trails if habitat structure is suitable. The mature and old-growth ponderosa pine stands that traditionally provided that habitat structure in the Blackfoot landscape have been logged particularly heavily since the late 1860s—and their relatively low abundance and fragmented dispersion on the landscape are limiting factors for flammulated owls.

Open roads appear to exert little direct influence on the owls and on their selection and use of habitat. As with most cavity dependent species, effects are indirect: Removal of large cavity-prone snags by firewood cutters and of roadside hazard trees by the HNF may reduce potential nesting opportunities. For flammulated owls, this is a concern in stands of certain composition and structure—namely, more open-grown forest environments with large trees at lower and mid elevations.

The impact of roads is indirect in that firewood cutters working the open road corridors are likely to remove large dead trees that the owls most often use for nesting. Flammulated owls will nest in live conifers where pileated woodpeckers have excavated cavities, but large snags are the primary source of nest holes—and in the road corridor, they are ephemeral.

The ongoing pine beetle epidemic is of particular relevance to flammulated owl habitat, since mature ponderosa pine forests—particularly the more open-grown stands with large trees at lower and mid elevations—represent a primary environment for these birds. The increase in large cavity-prone trees in stands of this structure represents new habitat opportunities for flammulated owls wherever sufficient live canopy remains. In the road corridors, however, the loss of these components is virtually inevitable.

Flammulated owl habitat has been mapped via the Region-1 habitat model, which is designed to predict environments most optimal to flammulated owl nesting, roosting, and foraging. Primary source data for the model has come from research in westside Forests—notably the Bitterroot, Lolo, and Nez Perce NFs. Field surveys on the HNF suggest that, as with several other species, habitat usage in the drier, more fragmented forests east of the Continental Divide is more diverse. That is, the owls tend to use combinations of necessary habitat components that are variations of the more optimal west-side arrangements—making use of 2 or 3 separate habitat patches, each with one optimal component, rather than holding out for a single stand with all components combined. Flammulated owls have also been observed taking advantage of mature aspen stands on the HNF. As a result, the Region-1 model almost certainly underestimates flammulated owl habitat in the planning area.

Direct and Indirect Effects - Alternative 1

Alternative 1 would have no direct effects on flammulated owls since no new road or trail construction is part of this alternative, and no habitat components would be lost as a result. Alternative 1 would maintain the status quo and would not increase the potential for indirect effects resulting from removal of large dead trees that might serve as nesting substrate.

Direct and Indirect Effects - Alternatives 2, 3 and 4

Snag removal by firewood cutters working the road corridors represents a loss of habitat components important to flammulated owls. The abundance of standing and downed dead trees is one of the significant factors allowing flammulated owls to occupy a forest stand.

Modeled habitat identifies approximately 27,209 acres of potential flammulated owl habitat and is composed of an infinite number of small polygons creating a virtually contiguous habitat across the Blackfoot landscape.

Table 78 shows new road or trail construction within flammulated owl habitat. Under alternative 2, 0.6 miles of new construction would occur, compared to alternative 3 and alternative 4 where 0.8 miles of new construction would occur. Since such minimal new construction would occur under these alternatives the effects would be insignificant. Project mitigations dictate that no key habitat components would be removed as a consequence (i.e. large mature trees).

Table 78. New road or trail construction mileage and designation per alternative within flammulated owl habitat in planning area

Road or trail number	Road or trail mileage within marten habitat	Alternative 2 Road or trail designation	Alternative 3 Road or trail designation	Alternative 4 Road or trail designation
1841-D1-New2	0.2	NA	Motorized	Motorized
U-New-4043	0.3	Motorized	Motorized	Motorized
U-New-4	0.2	Motorized	Motorized	Motorized
U-427	0.1	Motorized	Motorized	Motorized
Total	**0.8**			

Table 79 shows the miles and affected acres of new road/trail construction and road decommissioning within flammulated owl habitat. The affected acres were determined using a 300 foot disturbance zone to either side of the road/trail (for example: 0.8 x 600 x 5,280 /43560). Approximately 1.2 miles of road under alternative 2, affecting 87 acres within flammulated owl habitat would be decommissioned, compared to approximately 17 miles of road under alternative 3, affecting 1,236 acres and alternative 4 at 19 miles of road, affecting 1,382 acres. This would benefit the flammulated owl by decreasing access to woodcutters and decreasing disturbance.

Table 79. Miles and affected acres of new road/trail construction and road decommissioning within flammulated owl habitat

Activity within Flammulated Owl Habitat	Alternative 2	Alternative 3	Alternative 4
New road/trail construction (miles/acres)	1.1/80	.8/58	.8/58
Decom (miles/acres)	1.2/87	17/1,236	19/1,382

Cumulative Effects Common to the Flammulated Owl for All Alternatives

Past timber harvest throughout the Blackfoot landscape, has removed substantial acreages of mature and old-growth forest in which large-diameter conifer snags were prominent components.

A few recent timber harvest and thinning projects have emphasized retaining large trees in open-grown stands and allowing them to continue to grow in a forest configuration less likely to succumb to stand-replacing fire. Over the long term, these projects benefit flammulated owl habitat.

The ongoing HNF firewood policy that allows members of the public to take up to 10 cords of dead wood within reach of Forest roads continues to result in the removal of most large snags from the road corridors.

Recent and ongoing private land development (building construction, clearing, thinning, commercial timber harvest, dead tree salvage) has variable effects. Traditional clearcut logging and overstory removal eliminate potential habitat for flammulated owls; thinning projects—many of them aimed at reducing fuel loading for fire protection—are generally beneficial. Some recent timber harvest on state and private lands have opened up dense ponderosa pine stands, allowing them to develop in more open formations that would eventually be suitable for flammulated owls.

Foreseeable activities on HNF land that could affect flammulated owls to one degree or another include the salvage projects designed to deal with the ongoing bark beetle epidemic and that would remove numerous large dead trees, some of which could be of use to flammulated owls. On the other hand, those projects that retain mature trees in open-grown formations are likely to benefit the birds over the long term. Portions of the Forestwide roadside Hazard Tree Removal Project would be in mature ponderosa pine and may result in limited increase in potential flammulated owl habitat (although most surviving trees would not be ponderosa pine).

Future activity on non-Forest land within the cumulative effects area that could affect flammulated owl habitat includes settlement and associated development of private lands—often clearing that involves removal of large trees—and clearcut/overstory removal timber harvest and removal of large beetle-killed dead trees.

There are several past and ongoing activities occurring on the National Forest that affect general forested habitat. Some of these activities have or would have positive effects. For a complete list see appendix D. These include road decommissioning projects and some vegetation treatments that reduce fragmentation and edge effects. Overall reforestation projects are expected to be beneficial. Other activities may exacerbate fragmentation and edge effects as well as direct habitat loss. These include reopening previously closed roads, relocated roads, and some vegetation management. Vegetation management projects include HNF hazard tree removal, Poorman burn, and proposed Stonewall and Dalton vegetation management, Helmville Face, and Alice Creek burning project. Project specific analysis addresses direct, indirect and cumulative effects.

Summary and Determination of Effects

All Alternatives

It is the determination of this analysis that the proposed activities under all alternatives “may impact individuals or habitat, but will not likely contribute to a trend towards federal listing or loss of viability to the population or species.” This determination is based on the following rationale: minimal new construction to occur within habitat; removal of dead trees from the road corridor by firewood cutters is unlikely to have any measurable impact on flammulated owl occupancy of the landscape under any alternative.

Black-backed Woodpecker

General Effects of Roads to the Black-backed Woodpecker

The presence of open roads and motor trails has no direct effect on black-backed woodpecker habitat. Impacts come indirectly from the loss of dead trees to firewood cutting or to Forest operations designed to remove hazard trees from along the roads. Since black-backed woodpeckers are attracted first and foremost to snag arrays created by stand-replacing fire, roadside snag removal in these environments is the most telling. Woodpecker numbers are much lower in stands created by other agents, even where dead tree abundance is high.

The effects of ongoing bark beetle mortality put the status of black-backed woodpecker habitat in flux. The rapid replacement of healthy mature trees in closed forest formations by dead and dying trees in increasingly open-canopied arrays across the Blackfoot landscape may be creating new habitat opportunities for black-backed woodpeckers. On the other hand, the strong preference that these woodpeckers show for burned forest snags may mean that the beetle-killed forest will not be exploited by these particular woodpeckers. Even if black-back woodpeckers do move into the beetle-kill, it represents a short-term opportunity, likely to last no more than 10 years as the bark beetles run their course and the woodpeckers’ food supply fades away.

But during that time period, even with the likelihood that many snags would be removed by dead tree harvest operations, the loss of snags along roads to firewood cutting would not be a factor in determining whether or not black-backed woodpeckers are able to occupy the landscape. Because of the magnitude of the beetle kill, the fact that the open road corridors would not be available as habitat would be of no real consequence under any Travel Plan alternative—Concentrations of dead tree habitat would be abundant and widely distributed. And it may be a moot point if the black-backed woodpecker continues to spurn the beetle-killed forest.

Direct and Indirect Effects - Alternative 1

Alternative 1 maintains the status quo. The abundance of dead trees available as potential black back-woodpecker habitat is affected by current road patterns only to the extent that firewood cutters can remove snags from the open road corridors—and thus diminish habitat components in those areas. The degree to which black-backed woodpeckers are actually present depends upon the character of the environment created by the ongoing bark-beetle infestation of pine forests. This environment is currently a work in progress, and the effect of leaving the existing road system in place is speculative with regard to a species that appears to develop robust populations only in areas hit by stand-replacing fire.

Direct and Indirect Effects - Alternatives 2, 3, and 4

Alternative 2 would reduce open roads by 94 miles; alternative 3 would reduce open roads by 139 miles and alternative 4 by 157 miles. This is the extent of the road corridor that would no longer be available to firewood cutting and to removal of roadside hazard trees. The degree to which this would affect black-backed woodpeckers, which at this point have not put in an appearance in the beetle-killed forest, is highly speculative. It is likely that the removal of road corridor from the firewood cutting base would in a measurable way improve prospects for black-backed woodpeckers. Given the acreage of beetle-killed pine outside the road corridors, the impact on black-backed woodpecker occupancy by woodcutters would be insubstantial, since woodpeckers need extensive concentrations of dead trees to inhabit an area and have a strong preference for burned forest rather than beetle-killed trees.

The primary impact of open roads is that dead trees are lost to firewood cutting or to Forest operations that remove hazard trees along the roads. Since most of this activity occurs soon after the death of the trees, when bark insects are present in large enough numbers to attract woodpeckers, it amounts to a reduction of local habitat—at least for some species. In the case of black-backed woodpeckers, such snag removal could have an effect on potential habitat opportunity in stands where most trees have been killed (and less so in stands with variable mixtures of dead and dying trees). In the end, however, black-backed woodpeckers seem interested almost entirely in stands killed by fire and not those succumbing to bark beetles.

Cumulative Effects Common to the Black-backed Woodpecker, for All Alternatives

Fire management policy aimed at preventing stand replacing fires over several decades has, in the Blackfoot landscape, resulted in a paucity of black-backed woodpecker habitat. No other Forest Service policies or actions have had meaningful implications for these woodpeckers. Timber harvest on private lands has reduced the potential for a scenario where stand replacing fire would create abundant black-backed woodpecker habitat in those areas.

Reasonably foreseeable activities on HNF land that could affect black-backed woodpecker habitat revolve around projected salvage projects designed to deal with the ongoing bark beetle epidemic which would remove substantial numbers of dead trees. Future activity on non-Forest land that could affect black-backed woodpeckers is tied to salvage of dead trees and thinning projects designed to reduce the probability of stand replacing fire.

There are several past and ongoing activities occurring on the National Forest that affect general forested habitat. Some of these activities have or would have positive effects. For a complete list see appendix D. These include road decommissioning projects and some vegetation treatments that reduce fragmentation and edge effects. Overall reforestation projects are expected to be beneficial. Other activities may exacerbate fragmentation and edge effects as well as direct habitat loss. These include reopening previously closed roads, relocated roads, and some vegetation management. Vegetation management projects include HNF hazard tree removal, Poorman burn, and proposed Stonewall and Dalton vegetation management, Helmville Face, and Alice Creek burning project. Project specific analysis addresses direct, indirect and cumulative effects.

Summary and Determination of Effects

All alternatives

It is the determination of this analysis that the proposed activities under all alternatives will have No Impact to the black-backed woodpecker. This determination is based on the following rationale: removal of dead trees from the road corridor by firewood cutters is unlikely to have any measurable impact on black-backed woodpecker occupancy of the landscape under any alternative. It is likely that the removal of miles of road corridor from the firewood cutting base would in a measurable way improve prospects for black-backed woodpeckers. Given the acreage of beetle-killed pine outside the road corridors, the impact on black-backed woodpecker occupancy by woodcutters would be insubstantial, since woodpeckers need extensive concentrations of dead trees to inhabit an area and have a strong preference for burned forest rather than beetle-killed trees.

Western Toad

General Effects of Roads to the Western Toad

Toads are small, relatively slow-moving animals that are often enough on the move (between breeding, foraging, and hibernating areas) that they are more at risk from roads and motor trails as barriers and agents of fragmentation than virtually any other species of interest on the HNF (Maxell and Hokit 1999). Forest roads that seldom deter mammalian and bird species from moving about can be lethal barriers to toads. The roadways are exposed environments that are difficult to cross. While the loss is not significant in terms of total population numbers, it is high compared to other species, particularly where traffic volume is steady (Fahrig et al. 1995), and it amounts to another cumulative impact on a population under stress.

Primary local risk factors for western toads are those that affect breeding habitat through reductions in size and quality of riparian areas. Activities that result in the elimination of significant vegetation and increase water turbidity in turn reduce the quality of riparian areas as breeding habitat. Road construction, and the presence of dirt/gravel roads in riparian areas, would increase sedimentation in adjacent aquatic habitats if not contained. Off-route motorized use in riparian areas can also reduce habitat availability by degrading vegetation and increasing sedimentation (Maxell and Hokit 1999).

While toad populations are highest near riparian areas, adult toads travel some distance away from breeding sites, moving through a variety of upland habitats. Because they are small, move slowly and deliberately, and are highly dependent on cover, toads find Forest roads to be more of a barrier than almost any other local wildlife species. In addition to being a deterrent to efficient movement through the landscape, well-traveled roads are often a source of mortality for toads and for amphibians and reptiles in general.

Western toads often seek shelter in logs and under other coarse woody debris, and removal of these components from the road corridor—typically by firewood gatherers or by Forest Service burning operations designed to reduce fuel loading—can reduce local habitat opportunity (see additional discussion in the section Snag and Downed Logs).

Direct and Indirect Effects - Alternative 1

Alternative 1 retains the current configuration of roads and motor trails. This leaves 446 miles of open roads and trails in the Travel Plan Area, 115 miles of which are in riparian habitat conservation areas (RHCAs). Off-route riding would continue to be restricted by the State-wide OHV Decision (USDA Forest Service, USDI Fish and Wildlife Service 2001), which limits off-road vehicle use to a 300-foot corridor on either side of the road for reaching dispersed camping sites and prohibits riding in sensitive habitats (particularly wet sites). A Forest road system of this magnitude, while a contributing factor to depressing local western toad populations, represents a relatively minor impact compared to other decimating factors and sources of habitat degradation (chytrid fungus, draining and diversion of ponds and streams, water pollution, predatory fish introduction, cattle at aquatic sites).

Direct and Indirect Effects - Alternatives 2, 3 and 4

Alternative 2 would reduce open route mileage 58 miles overall, and 15 miles in riparian habitat conservation areas. Alternative 3 would reduce open route mileage by 153 miles overall and would decrease by 36 miles in riparian habitat conservation areas, and alternative 4 would reduce open route mileage by 150 miles overall and 32 miles in riparian habitat conservation areas.

All action alternatives would incrementally reduce mortality risk for western toads in the upland areas, reduce the area from which coarse woody debris is likely to be removed by firewood gatherers, and reduce the miles of roadside riparian habitats likely to be disrupted by motorized use. The result would not be measurable in terms of shifts in local western toad population viability.

The expectation of the 300-foot buffer under alternatives 2, 3 and 4 is that relatively few new sites would be utilized within the 300-foot area, as most good camping/parking areas already have a road to them.

Cumulative Effects Common to the Western Toad for All Alternatives

Recent and ongoing activities on the Forest that have negative implications for western toads include: Timber sales that have created large openings with minimal coarse woody debris; retention of grazing allotments on National Forest System land, most of which allow cattle some degree of access to riparian and aquatic habitats; small mining operations across the landscape; large mining operations on and adjacent to the Forest.

Actions that have improved prospects for western toads include: Revision of allotment management plans that have resulted in lower cattle numbers and range improvements aimed at protecting riparian sites; trail relocation projects that have removed trails from productive riparian areas to upslope locations; establishment of the Tri-State OHV Plan, which prohibits riding off established motor routes except for dispersed camping access; road and motor trail closures associated with timber harvest projects; mine site reclamation projects that have reduced sedimentation and pollution at a number of aquatic sites.

Development of private lands adjacent to the Forest and on inholdings within Forest boundaries has modified riparian and aquatic habitats (by water diversion, sedimentation, degradation of vegetation) and subtracted potential breeding habitat for western toads. Timber harvest on private land has removed forest cover useful to toads, but has often increased the amount of coarse woody debris at ground level—a benefit to toads. Cattle grazing on private ranchlands have led to degradation of riparian/aquatic habitat at many of sites. Off-highway vehicle, trail bike, and 4-wheeling in riparian areas disrupts habitat where toad densities are likely to be highest.

Reasonably foreseeable activities on the HNF that may affect toads to one degree or another include: road improvement, closures or decommissions; implementation of grazing allotment revision; and salvage projects designed to deal with the ongoing bark beetle epidemic that may remove or thin out understory vegetation and woody debris in some areas. Future activity on lands of other ownerships within the cumulative effects area that may affect western toads includes: settlement and associated development of private lands (including road building);

timber harvest and removal of beetle-killed trees; continued OHV and other motorized activity; continued heavy grazing on private ranchlands, including riparian sites.

There are several past and ongoing activities occurring on the National Forest that affect general forested habitat. Some of these activities have or would have positive effects. For a complete list see appendix D. These include road decommissioning projects and some vegetation treatments that reduce fragmentation and edge effects. Overall reforestation projects are expected to be beneficial. Other activities may exacerbate fragmentation and edge effects as well as direct habitat loss. These include reopening previously closed roads, relocated roads, and some vegetation management. Vegetation management projects include HNF hazard tree removal, Poorman burn, and proposed Stonewall and Dalton vegetation management, Helmville Face, and Alice Creek burning project. Project specific analysis addresses direct, indirect and cumulative effects.

Summary and Determination of Effects

All Action Alternatives

It is the determination of this analysis that the proposed activities under alternatives 2, 3, and 4 “may impact individuals or habitat, but would not likely contribute to a trend towards federal listing or loss of viability to the population or species.” This determination is based on the following rationale: Even though open road miles are decreasing in each of the alternatives including in the RHCAs, the expectation of the 300 foot buffer under alternatives 2, 3, and 4 was that relatively few new sites would be utilized within the 300-foot area, as most good camping/parking areas already have a road to them.

Management Indicator Species

Elk – Hunted Species Group

Direct and Indirect Effects - All Alternatives

The following measures are evaluated to analyze effects to elk:

- Summer range Forest Plan Standard 3 for hiding cover (pg. II/17) and habitat effectiveness by Elk Herd Unit (EHU)
- Winter Range Forest Plan Standard 3 for thermal cover by EHU (pg. II/17)
- Hiding cover/open road densities Forest Plan Standard 4(a) by EHU (pg. II/17)
- Proposed revision to Big Game Standard 4a - Hunting season elk security by Elk EHU
- Big Game Standard 4(c) (pg. II/18) - Winter range road management

Disturbance processes including climate change, insect and disease and fire will continue to influence elk use of the project area. Predation by wolves, grizzlies, black bears, and lions along with hunter harvest will continue to influence elk and other big game population levels. Disturbances and activities on private land within and adjacent to the planning area are also expected to continue to influence elk population levels and their distribution during different seasons of the year.

Hiding Cover

The existing condition for the planning area as a whole does not meet Big Game Standard 3 for levels of summer range hiding cover. The Standard requires that 50 percent hiding cover be maintained per elk herd unit. Only three of the eight EHU within the planning area currently meet minimum hiding cover requirements. Regardless, MFWP elk population trends and estimates (Table 63) demonstrate resident elk are successfully utilizing the Blackfoot landscape and maintaining or increasing their numbers in associated elk hunting districts.

All of the action alternatives would retain the current level of HFP hiding cover (+0.5 percent) within each EHU although minor amounts of hiding cover varies among alternative due to losses resulting from road and/or trail development. As shown in table 80 below, the Beaver Creek, Nevada Creek, and Poorman Creek EHUs, which currently meet the 50 percent requirement for summer range hiding cover, will all continue to do so under the action alternatives. None of the action alternatives provide additional hiding cover; therefore none of the alternatives will help the remaining EHUs meet Big Game Standard 3 for hiding cover. However, the project will remain consistent with the existing condition for hiding cover supporting the intent of big game standard 3.

Although each alternative results in a negligible loss of hiding cover due to road or trail construction, new connector route construction would not occur in elk hiding cover under any alternative. As shown in table 80 below, total cover loss due to new travel route construction includes 29 acres under alternative 2, 30 acres under alternative 3, and 28 acres under alternative 4. Of these acres, up to 19 (depending on the alternative) would be removed from herd units currently below standard 3. However, the removal of hiding cover does not change the remaining hiding cover percentages in those herd units currently below the Forest Plan threshold. And, the effect of removing hiding cover for road/trail construction/reconstruction is negligible in terms of changing how elk use the landscape. The proposed construction and reconstruction of trails and roads are primarily in locations already heavily roaded.

Table 80. Acres of hiding cover by alternative *

Herd Unit	Alternative 1 Hiding Cover		Alternative 2 Hiding Cover		Alternative 3 Hiding Cover		Alternative 4 Hiding Cover	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Arrastra Creek	11,540	41.6	11,540	41.6	11,540	41.6	11,540	41.6
Beaver Creek	17,683	**54.6**	17,672	**54.5**	17,672	**54.5**	17,672	**54.5**
Flesher Pass	39,847	43.7	39,847	43.7	39,846	43.7	39,846	43.7
Keep Cool	15,768	35.6	15,766	35.6	15,766	35.6	15,765	35.6
Landers Fork	59,695	43.7	59,695	43.7	59,695	43.7	59,695	43.7
Nevada Creek	25,029	**64.5**	25,029	**64.5**	25,029	**64.5**	25,025	**64.5**
Ogden Mountain	24,432	43.4	24,432	43.4	24,432	43.4	24,432	43.4
Poorman Creek	42,560	**63.1**	42,544	**63.1**	42,544	**63.1**	42,551	**63.1**

* EHUs meeting minimum recommended values shown in **bold**.

The hiding cover requirement (50 percent) for lands within management area T3 is currently being met, with 18,436 acres of cover representing 65 percent of the T3 acreage in the planning area. Under the action alternatives, minor amounts of hiding cover (8 acres in alternatives 2 and 4; 9 acres in alternative 3) will be lost to road or trail development, but not enough to violate the management area-specific standard under any alternative. All action alternatives comply with this standard, maintaining approximately 65 percent hiding cover within Management Area T3 in the planning area.

The current Big Game Standard 4a is intended to address elk vulnerability during the hunting season. Hiding cover is a key component of this standard and only three of eight herd units currently meet the minimum hiding cover requirement. Because the 3 action alternatives deal only with adjustments to road and trail management within the planning area and do not create additional cover, none of the action alternatives will do anything to improve the current situation.

Winter Range

Big Game Standard 3 also requires that 25 percent thermal cover be maintained within each Elk Herd Unit. None of the eight EHUs currently meet the minimum thermal cover requirements, and none of the action alternatives will do anything to improve this situation. Regardless, MFWP elk population trends and estimates (Table 63) demonstrate resident elk are successfully utilizing the Blackfoot landscape and maintaining or increasing their numbers in associated elk hunting districts. As shown in table 81 below, minor amounts of thermal cover are affected by road or trail construction/reconstruction under any action alternatives within two EHUs. Thermal cover in the remaining six EHUs would not be affected by project activities. Construction of mountain bike trails would not remove enough forest cover to effect thermal capability of the stand and no bike use would occur during the winter to preclude use by elk, therefore there would be no change from the current condition to winter range under any alternative as a result of mountain bike trail construction or use. The project will remain consistent with the existing condition for thermal cover supporting the intent of big game standard 3.

Table 81. Road and trail construction or reconstruction within winter range

Elk Herd Unit	Alternative 1 Current Acres of Winter Range Thermal Cover	Alternative 2 Acres of Winter Range Thermal Cover Affected	Alternative 3 Acres of Winter Range Thermal Cover Affected	Alternative 4 Acres of Winter Range Thermal Cover Affected
Beaver Creek	632	1.1	1.1	1.1
Poorman Creek	3,218	2.1	2.1	1.6

Within winter range, alternative 2 would construct or reconstruct 1.4 miles of road or trail, alternative 3 would construct or reconstruct 4.1 miles of road or trail, and alternative 4 would construct or reconstruct 7.8 miles of road or trail. Alternatives 2 and 3 would construct 13.4 miles of new mountain bike trail; alternative 4 would construct 7.6 miles.

In addition to the Forestwide standard, Management Area L1 and W1 both have area specific thermal cover standards (25 percent). None of the action alternatives affect winter range thermal cover within these Management Areas, so there would be no changes from the existing condition under any alternative as a result of this project.

The effects to winter range and winter range thermal cover would be similar among the three action alternatives. Under the existing condition motorized use is only permitted on ‘designated’ open routes through winter range areas. The designated open status of these routes would not change under any action alternative. These designated open routes are consistent with HFP direction (pg. II/18) that directs that “all winter range areas will be closed to vehicles between

December 1 and May 15. Exceptions (i.e., access through the winter range to facilitate land management or public use activities on other lands) may be granted." Since travel would be limited to existing designated routes under all alternatives, the availability of winter range and winter range thermal cover would remain unchanged under any action alternative.

Although the accessibility of these routes to wheeled use varies from year to year depending upon snow conditions, there are no changes to this situation proposed under any of the action alternatives. The winter grooming season runs from 12/1 through 3/31, initiating once sufficient snowpack is present. Under the 2001 Tri-State Off-Highway Vehicle (OHV) Decision that amended nine forest plans including the HNF Plan, once a route is groomed, it is then closed to wheeled use until the grooming season ends.

Effects Common to Alternatives 2, 3, and 4

Summer Range and Calving Areas

Forest Plan management direction for summer range (pgs. II/17, II/18) includes maintaining adequate summer range to support the habitat potential; maintaining 50 percent or greater summer range hiding cover (under the MFWP definition of hiding cover) per elk herd unit and; excluding motorized use in calving grounds and nursery areas during peak use by elk.

Under all action alternatives, known elk calving and nursery areas would be protected by road closures or seasonal motorized restrictions.

Lands in the Bartlett creek drainage that were previously owned by Plum Creek Timber Company are known to support considerable elk calving and nursery use in recent years. This use is likely correlated to the lack of public motorized access into the drainage since 2002. Under each of the action alternatives motorized use would be restricted on these lands from 9/1 to 6/30 to minimize impacts to elk calving activities. Other known elk calving and nursery areas in the planning area would continue to be protected by road closures or seasonal motorized restrictions.

In addition to the Forestwide standards, Management Area W2, which applies to all acquired lands in the Bartlett creek area, has specific road management standards to avoid impacts in riparian and other areas that have important spring, summer or fall habitats for big game. None of the action alternatives propose new roads within Management Area W2, so there would be no changes from the existing condition under any alternative as a result of this project.

Habitat Effectiveness

While management options for motorized summer access would create only minor changes in the level of HFP hiding cover under any alternative, any changes to motorized access influences the effectiveness of whatever summer hiding cover is available for actual use by elk. Summer range habitat effectiveness is used to measure how much of a given area elk are likely to use during the non-hunting season. It is a function of suitable habitat components (cover, forage, wet sites, travel routes) and reduced human disturbance (generally measured in terms of open roads and motorized trails) (Christensen et al. 1993). As reflected in the habitat objectives and management strategies for the Granite Butte EMU (MFWP 2004, pg. 198) habitat effectiveness is an important consideration of access management. The Elk Plan does not however, identify thresholds or target levels for habitat effectiveness. For the Bob Marshall Wilderness Complex BMU habitat management strategies include maintaining elk habitat security and retention/recruitment of effective cover blocks (MFWP 2004, pg. 117).

While habitat effectiveness is not an HFP standard requirement, it is a valuable tool for comparing differences between alternatives. The habitat effectiveness for each alternative is displayed in table 82 below. The recommended minimum value for habitat effectiveness is 50 percent (Lyon 1983). Road densities are determined across the entire herd unit including private lands and associated roads. As shown in table 82 below, only the two elk herd units currently meeting the 50 percent habitat effectiveness recommendation will continue to do so under any action alternative. Although all action alternatives show an improvement in habitat effectiveness due to a decrease in open road density, the proposed actions are not enough to move any EHU enough to meet the 50 percent minimum recommendation.

Table 82. Habitat effectiveness by alternative *

Herd Unit	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
	ORD	HE	ORD	HE	ORD	HE	ORD	HE
Arrastra Creek	2.5	45%	2.6	44%	2.5	45%	2.5	45%
Beaver Creek	3.2	37%	3.1	38%	3.0	39%	3.0	39%
Flesher Pass	2.1	47%	2.0	48%	1.9	49%	1.9	49%
Keep Cool	2.7	43%	2.5	45%	2.5	45%	2.5	45%
Landers Fork	1.3	**55%**	1.3	**55%**	1.3	**55%**	1.3	**55%**
Nevada Creek	1.7	**51%**	1.5	**53%**	1.4	**54%**	1.5	**53%**
Ogden Mountain	3.3	36%	3.0	39%	3.0	39%	3.0	39%
Poorman Creek	2.8	41%	2.4	46%	2.4	46%	2.9	40%

* EHUs meeting minimum recommended values shown in **bold**.

ORD=open road density (mi/mi2) HE= habitat effectiveness

Hiding Cover/Open Road Densities as related to Hunting Season Elk Vulnerability (Standard 4a)

Maintaining hiding cover in the project area can be important to maintain big game habitat capability and hunting opportunity and to provide for a first week bull elk harvest that does not exceed 40 percent of the total bull harvest (Forest Plan Standard 4(a) pg. II/17).

Hiding cover is a component of Forest Plan Standard 4a that addresses elk vulnerability based upon the relationship between hiding cover and open road densities during the hunting season. Five of the eight herd units do not meet the 50 percent hiding cover requirement which is half of the equation for FP Standard 4a. Since this project would not increase hiding cover under any action alternative, there is no feasible way to bring these five herd units into compliance with the FP standard. Even closing all roads in herd units that do not meet the minimum hiding cover requirement would not bring them into compliance. As a result, a programmatic Forest Plan amendment is necessary for project implementation.

The intent of standard 4a is to provide for a first week bull harvest that does not exceed 40 percent of the total general season bull harvest. This element of the standard represents a FWP objective that is not practical to apply at the herd unit scale due to the manner in which harvest information is collected and reported by MFWP. Hunter survey information is collected at the Hunting District or EMU level not the herd unit level. As shown in the 2004 MT Elk Management Plan, the Granite Butte EMU first week bull harvest from 1999-2001 was at 36 percent thereby meeting the objective of less than 40 percent of the bull harvest occurring during the first week of the general season (MFWP 2004 pg. 197). For the Bob Marshall Wilderness

Complex BMU there is no information pertaining to the first week bull harvest and it is not identified as a management concern.

Access management options between alternatives can only serve to influence open road densities and or the effectiveness of summer habitat. Forest Plan standard 4a, which conceptually, is intended to address elk vulnerability during the hunting season, is a numerical relationship between road densities and hiding cover availability. Table 83 that follows reflects the changes between alternatives based on access management differences on how that would move either move the herd unit closer or further from meeting the FP Standard 4a. No level of road closure however, would bring the five herd units that do not meet the minimum hiding cover requirement into compliance with the standard.

Table 83. Elk vulnerability alternative comparison - hiding cover to open road density[4]

Elk Herd Unit	Hiding Cover	Open Road Density (miles/square mile) During Hunting Season				Alternatives Meeting Big Game Standard #4a
		Alt 1	Alt 2	Alt 3	Alt 4	
Arrastra Creek[1]	42%	0.9	1.0	0.9	0.9	None
Beaver Creek	55%	1.4	1.4	1.2	1.2	None
Flesher Pass[1]	44%	0.9	0.9	0.8	0.8	None
Keep Cool[1]	36%	1.3	1.3	1.1	1.0	None
Landers Fork[1]	44%	0.5	0.4	0.4	0.4	None
Nevada Creek	64%	0.9	0.8	0.7	0.6	1, 2, 3, 4
Ogden Mountain[1]	43%	1.2	1.1	1.1	1.0	None
Poorman Creek	63%	1.4	1.4	1.1	1.0	1, 2, 3, 4

The effects of the four travel plan alternatives on standard 4(a) are further described in the next section.

Comparison of Forest Plan Amendment Alternatives

This section describes the effects of the two Forest Plan Amendment alternatives (A and B) relative to the four Travel Plan alternatives (1-4). It discusses relative changes in the way elk security is enumerated between alternatives A and B. Effects of Travel Plan alternatives on other pertinent aspects of elk ecology and management are discussed in the Elk section.

Alternative A (No Action Alternative)

Alternative A is the current Forest Plan standard. Table 83 summarizes the status of each EHU in the Blackfoot planning area by Travel Plan alternative relative to this index (Big Game Standard 4(a) (USDA 1986, pg. II/17 – II/18).

Although open road densities decrease in most EHUs under the action alternatives as compared to existing conditions (alternative 1), application of the existing Big Game Standard 4(a) to the Travel Plan alternatives reveals no change relative to the existing standard. These proposed reductions in hunting season road access (with consequent benefits for elk) do not result in any

[4] Our open road density calculations are more conservative than the Forest Plan intended since we are weighting local roads by a factor of one rather than by a factor of 0.25, which is the factor whereby the Plan was crafted.

of the sub-standard EHUs moving into compliance with standard 4(a). This illustrates the concern that the big game security index, as currently defined in the Forest Plan, is not a particularly sensitive indicator of changing elk security conditions. These EHUs will never be able to meet the existing standard as long as available cover is below the minimum 50 percent threshold. No amount of road management will improve that condition. Even though all the action alternatives are expected to maintain or improve existing elk security in each EHU through reductions in road densities, this improvement cannot be reflected in the simplistic yes/no results used to report compliance with the current standard. Furthermore, alternative A does not provide a measure on how unroaded areas are distributed within a respective herd unit. Several authors describe the importance of distribution of large unroaded areas for security (e.g. Lyon et al. 1985, pp. 7-8; Lyon and Canfield 1991, p 104-105; Canfield 1991, pp. 50-51; Christensen et al. 1993, pg. 4, 5; McCourquodale 2013, pg. 9). Road density data alone does not address distribution of 'unroaded' areas.

The Beaver Creek EHU currently meets the 50 percent hiding cover requirement but does not comply with standard 4a due to open road densities. To bring the EHU in compliance with standard 4a at that level of hiding cover would require closing approximately 36 miles of road during the hunting season based on the requirements shown in the hiding cover/open road density chart (table 83). However, many of the open road miles in this EHU are represented by highways or other county, state, and private roads, all beyond the control of the Forest Service, but still counted as part of the total road density. To bring the Beaver Creek herd unit into compliance with Big Game Standard 4a with no increase in available hiding cover would mean that approximately 1 mile of road under FS jurisdiction could remain open during the big game hunting season. Even if it were possible to close all of the roads in the project area (several miles of roads are outside of Forest Service jurisdiction), some of the concerns identified by MFWP would not be ameliorated especially in those HDs where access to elk is a management concern.

Alternative B – (Preferred Alternative)

Alternative B utilizes the concept of the percentage of an area in security to enumerate the resulting elk security differences between the Travel Plan alternatives. The actual on-the-ground results regarding NFS road management and the changes in elk security are the same as under alternative A, only the method of describing and evaluated those results has changed. Table 84 displays total acres and percent of elk security as calculated under this alternative. The results apply only to that portion of the EHU that is within the administrative boundary of the Lincoln Ranger District, Helena National Forest, and are based on blocks greater than or equal to 1000 acres located greater than or equal to 0.5 mile from motorized routes that are open during the hunting season (9/1 through 12/1). The table also displays how this security is arranged on the landscape, relative to the number of security blocks established under each Travel Plan alternative (See also figures 6 through 9 beginning on page 371).

Table 84. Elk Security during the hunting season (9/1 – 12/1) under forest plan amendment alternative b by travel plan alternative

Elk Herd Unit Total Acres within Administrative Boundary	Alternative. 1			Alternative. 2			Alternative. 3			Alternative. 4		
	Acres of Elk Security	# of Security Blocks	% of EHU (within boundary)	Acres of Elk Security	# of Security Blocks	% of EHU (within boundary)	Acres of Elk Security	# of Security Blocks	% of EHU (within boundary)	Acres of Elk Security	# of Security Blocks	% of EHU (within boundary)
Arrastra Creek (15,635)	8,884	2	57%	8,532	2	55%	8,918	2	57%	8,918	2	57%
Beaver Creek (19,987)	8,144	2	41%	9,419	4	47%	10,362	2	52%	9,554	3	48%
Flesher Pass (58,117)	15,786	5	27%	18,799	4	32%	28,208	4	49%	24,652	2	42%
Keep Cool (30,478)	10,929	4	36%	14,138	3	46%	18,173	1	60%	15,870	2	52%
Landers Fork (109,083)	91,553	1	84%	91,634	1	84%	91,634	1	84%	91,364	1	84%
Nevada Creek (27,098)	12,052	1	44%	12,685	1	47%	15,971	1	59%	14,027	2	52%
Ogden Mountain (28,144)	5,847	1	21%	6,412	1	23%	11,553	1	41%	6,756	1	24%
Poorman Creek (43,646)	5,375	2	12%	6,426	3	15%	17,513	3	40%	14,013	3	32%
Totals[1]	**15,857**	**14**	**48%**	**168,055**	**13**	**51%**	**202,332**	**10**	**61%**	**185,183**	**11**	**56%**

[1] The total number of Security Blocks reflects the actual number on the landscape. Some Security Blocks overlap EHU boundaries and are located within two or more EHUs.

As can be seen in table 84, elk security areas provide a means of gauging elk security that is sensitive to changes in open motorized route configuration. This allows a more realistic assessment as to potential impacts of travel management proposals in different herd units than the current HFP standard (the Big Game Security index), which shows no difference between any of the alternatives in terms of Forest Plan compliance. The difference between the two methods is largely a function of eliminating hiding cover as a primary determinant of elk security and focusing on the size and distribution of large habitat blocks to which vehicle access is limited. This is particularly appropriate in this case, as Travel Plan alternatives deal with changes in open road patterns and generally have no impact on hiding cover. However, Forest Plan standards remain in place that recognizes the importance of elk hiding cover (i.e. Forestwide Big Game Standards 3, 5 and several management area-specific standards).

Among the four Travel Plan alternatives, security areas in alternative 1 – the existing condition – are more numerous due to their smaller size which in turn is a reflection of the broad distribution of open motorized routes. The action alternatives generally serve to consolidate security areas into larger contiguous blocks resulting in an increase in total overall acres of security and a larger average size of security areas as compared to the existing condition. In turn, this could affect sex and age structure of elk as well as serve to retain more elk on public land.

Improvements in elk security can reduce bull mortality and subsequently can improve bull/cow ratios (Leptich and Zager 1991, pg. 129, 130).

Security increases in all of the EHUs in alternative 2 with the exception of Arrastra Creek as a result of opening Forest Road (FR) 4106-J2. The largest improvement in security habitat would be in the Keep Cool EHU as a result of converting the status of FR 418 from a motorized trail in the existing condition to a non-motorized trail in alternative 2. This change would move security habitat within the EHU from 27 percent to 32 percent Security habitat would increase in the Flesher Pass, Ogden Mountain and Beaver Creek EHUs as a result of converting motorized trails to a non-motorized status (FR 401 and 404 in the Ogden Mountain EHU and 485 in the Beaver Creek EHU) and closing roads currently open yearlong (FR 1819 and 4090-B1, F1, and G1 among others in the Flesher Pass EHU). Security habitat within the Landers Fork EHU would basically remain the same between the existing condition and alternative 2. Both the Nevada Creek and Poorman Creek EHUs would undergo a 3 percent increase in security in alternative 2. Improvements in security are a result of converting open roads to closed roads in this alternative (FR 601-K2, K3, and K4 in the Poorman Creek EHU and FR 296-A2 and 4047-B1 and C1 in the Nevada Creek EHU).

Alternative 3 reflects the greatest increases in security percentages due to motorized route closures and a 9/1 seasonal closure date on motorized routes in order to minimize elk displacement associated with the archery season. This alternative was identified by MFWP during evaluation of the Draft Blackfoot Non-winter Travel Plan as their preferred alternative from an elk security standpoint and served as a basis for much of their collaborative input during the crafting of alternative B. Increases in security are due to converting motorized trails to non-motorized trails (FR 440 in the Flesher Pass EHU, 487 in the Poorman Creek EHU, and 418 in the Keep Cool EHU) , decommissioning existing roads (FR 1819 in the Flesher Pass EHU and 1825-B1 in the Poorman Creek EHU), closing roads currently open (FR 4047-B2, among others, in the Nevada Creek EHU), and imposing a seasonal restriction that includes the hunting season on FR 417 in the Keep Cool EHU. Security habitat would increase in the Ogden Mountain EHU and Beaver Creek EHU primarily as a result of converting FR 401 and 404 in the Ogden Mountain EHU from a motorized trail to a non-motorized trail and by putting FR 1824-I1 into storage in the Beaver Creek EHU as well as imposing a seasonal restriction during the hunting season on FR 4106-002. Security habitat in the Arrastra Creek and Landers Fork EHUs remains essentially the same as the current situation with a small (less than 1 percent) improvement.

Alternative 4 was developed after the public comment period for the Draft Blackfoot Non-winter Travel Plan as a response to public comments and further analyses. As in alternative 3, all EHUs still show an improvement in elk security under this alternative albeit to a lesser extent than alternative 3.

Alternative B allows for temporary reductions in elk security provided impacts to elk security are mitigated at the project level. Mitigations include but aren’t limited to one or more of the following: timing restrictions of activities in security blocks, confining activities to one security block at a time, completing as much of the preparatory work as possible prior to the hunting season, reducing the size/acres/intensity/magnitude of the activity, allowing activities that benefit elk (particularly in management areas with a wildlife emphasis), limiting activities to one season, temporarily closing roads open to the public to compensate for the activity, etc.

Administrative use of motorized routes that are closed to the public and management activities within security blocks during the hunting season could result in temporary reductions in elk security regardless of the selected travel plan alternative. The temporary loss of security associated with either vehicular use on closed routes or activities within security blocks could result in displacement of elk to non-secure areas which could lead to increased vulnerability during the hunting season. Elk could also be displaced to private land which could render management of, and access to, elk difficult. Several studies have documented the effect of roads on elk security, population structure, and hunter success (Edge and Marcum 1991; Leptich and Zager 1991; Unsworth and Kuck 1991; Gratson and Whitman 2000, Gucinski et al. 2001, Grigg 2007). Several other studies have documented the displacement effects of management activities on elk (USDA 1978, Edge and Marcum 1985, Lyon et al. 1985). However, in several studies on impacts to elk associated with logging activity, displacement of elk tended to be temporary with some elk returning during nights and weekends when logging activity was suspended (Beall 1974 and Edge 1982 as cited in Lyon and Christensen 2002, pg. 562).

Forest Plan standards and recommendations remain in place that minimizes impacts to elk during the hunting season. These include:

- Representatives from the Helena Forest and MFWP will meet annually to review the existing Travel Plan (USDA 1986, pg. II/19);
- Montana Cooperative Elk-Logging Study Recommendations, in Appendix C, will be followed during timber sale and road construction projects (Ibid, pg. II/19);
    - Disturbance by heavy equipment can be completed in the shortest possible time (Ibid, Appendix C, pg. C/2);
    - Logging activity can be confined to a single drainage at a time and all work completed in the shortest possible time frame (Ibid).

Administrative use of motorized routes closed to the public and allowing management activities during the hunting season has been in practice – and mitigated at a project level - since the crafting of the Forest Plan and is consistent with the existing Big Game Standard 4(a). Meanwhile, elk numbers have increased steadily since the crafting of the Forest Plan which suggests that displacement associated with this use – as long as mitigation is in place to minimize this displacement - has not depressed elk numbers. Remaining standards as well as design features and/or mitigation measures will continue to be applied at the project level under alternative B such that displacement of elk is expected to be temporary and should not compromise the ability of the Forest and MFWP to realize our management goals relative to elk and elk security.

Overall, implementation of alternative B should reduce and/or eliminate elk displacement from public land prior to normal migration events. This addresses a primary management goal for MFWP: maintaining or enhancing elk presence on NFS lands so that elk are available to the hunting public on public land. Several studies indicate that elk may find more complete security during hunting seasons by moving to private lands that restrict hunter access or prohibit hunting (Burcham et al. 1999, Proffitt et al. 2013). This response to hunting risk may result in elk herds that spend increasing amounts of time on privately owned lands and limit the ability to manage herd sizes through harvest (Haggerty and Travis 2006). Implementation of alternative B can also lead to improvements in bull/cow ratios (Leptich and Zager, pg. 129, 130). However, elk distribution can be affected through road management and establishment of security areas over time (Rowland et al. 2005 and McCorquodale 2003) in turn providing MFWP the flexibility to achieve their population objectives.

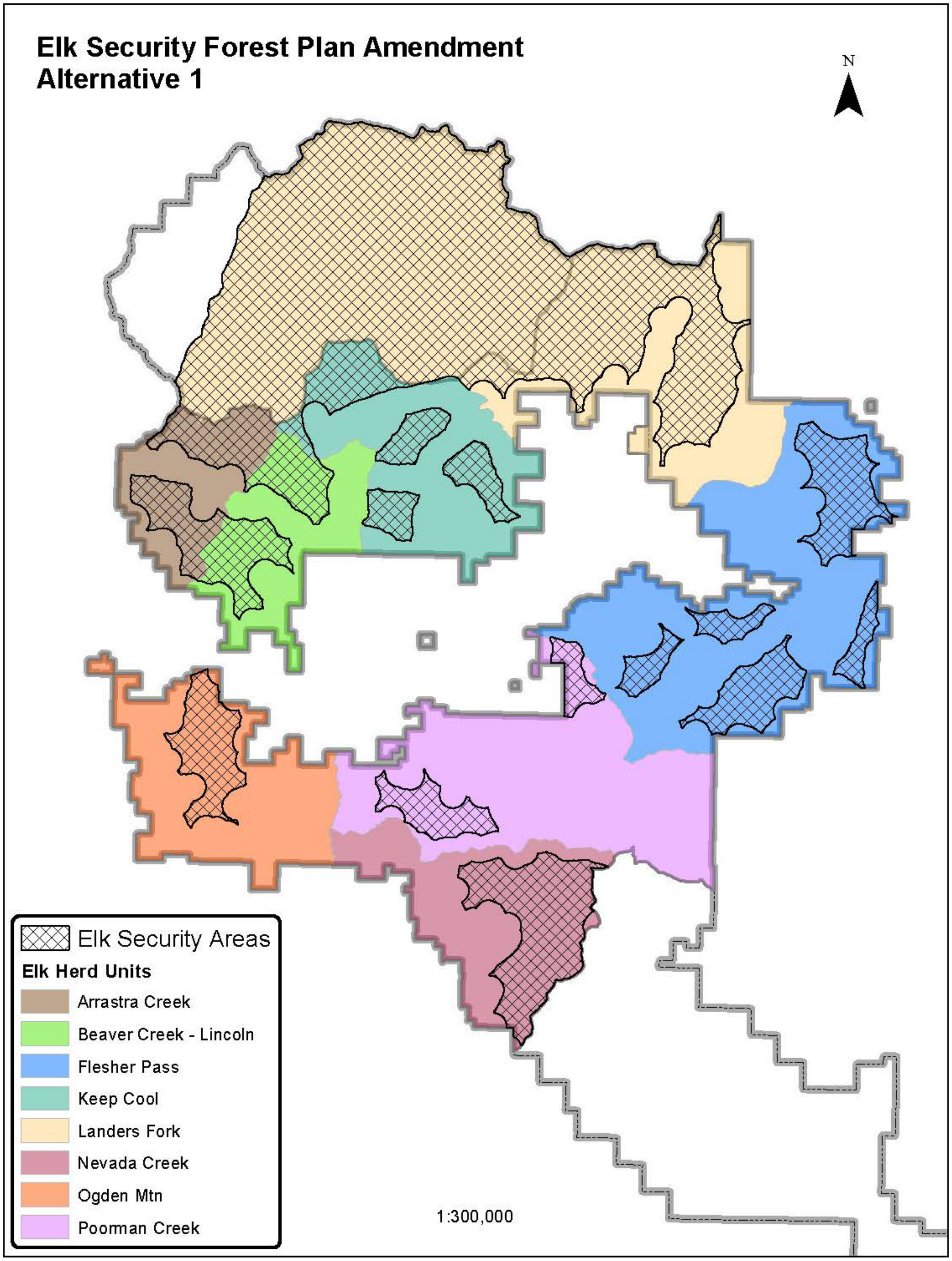

Figure 6. Elk security areas –alternative 1

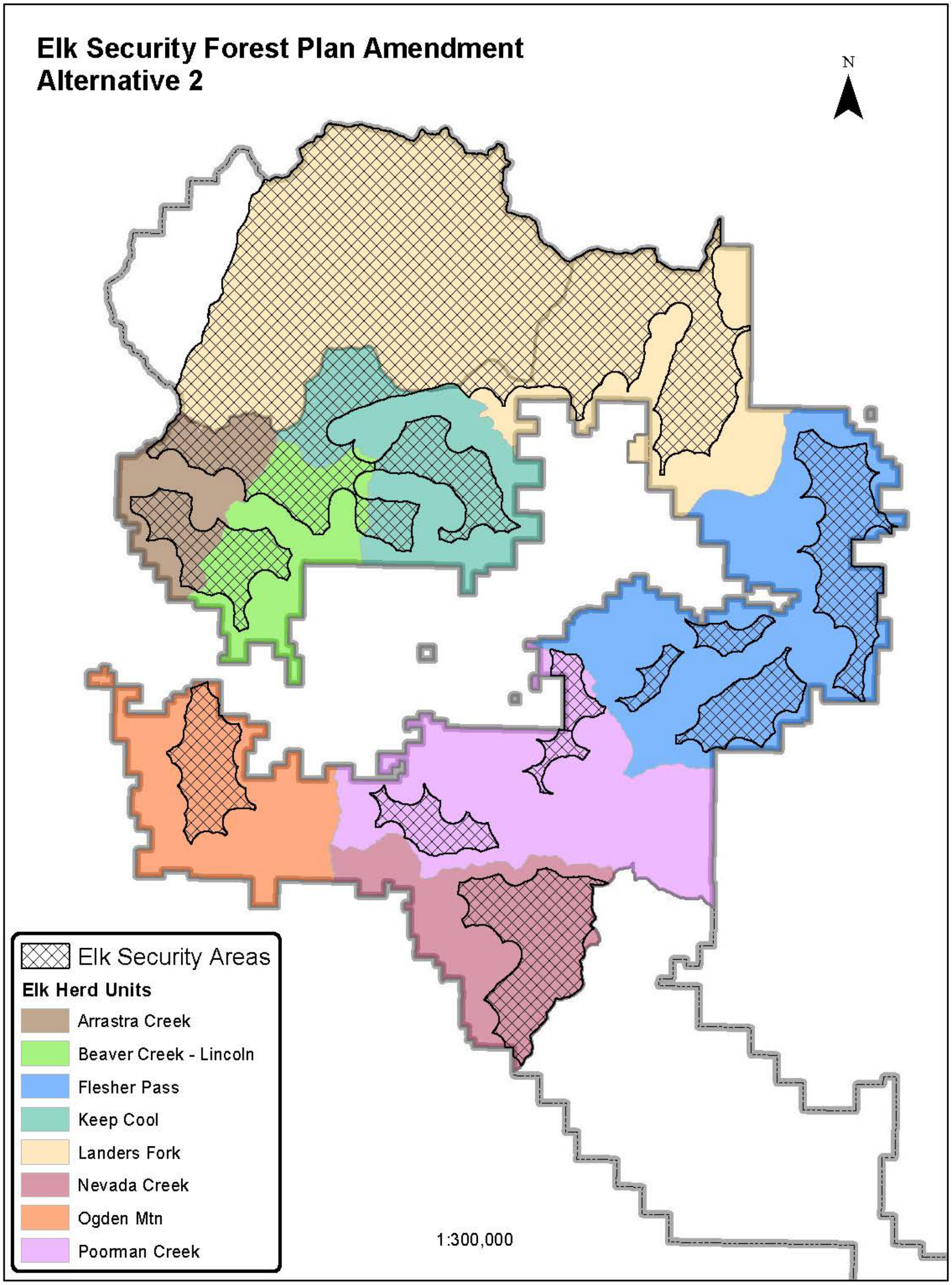

Figure 7. Elk security areas –alternative 2

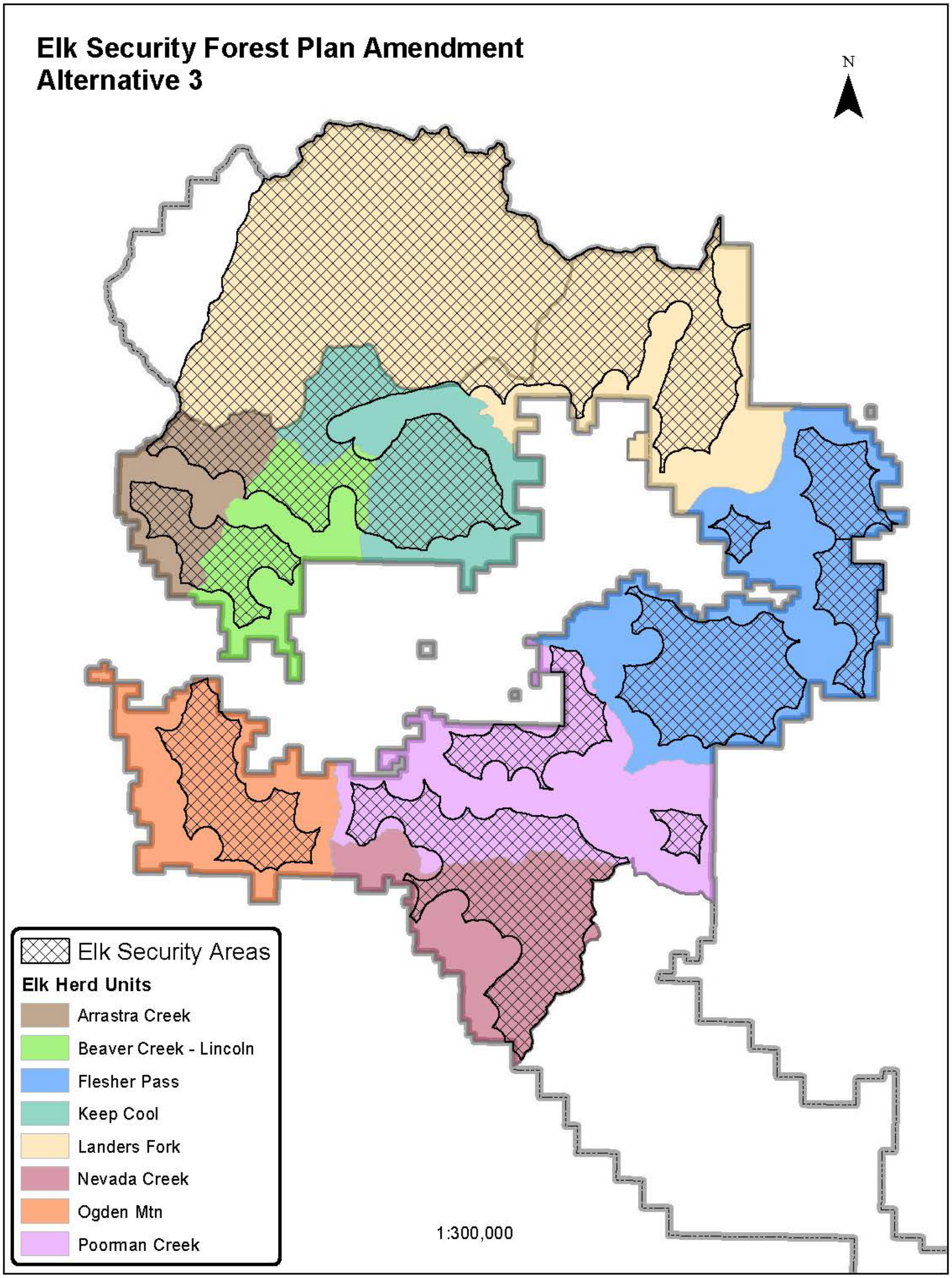

Figure 8. Elk security areas –alternative 3

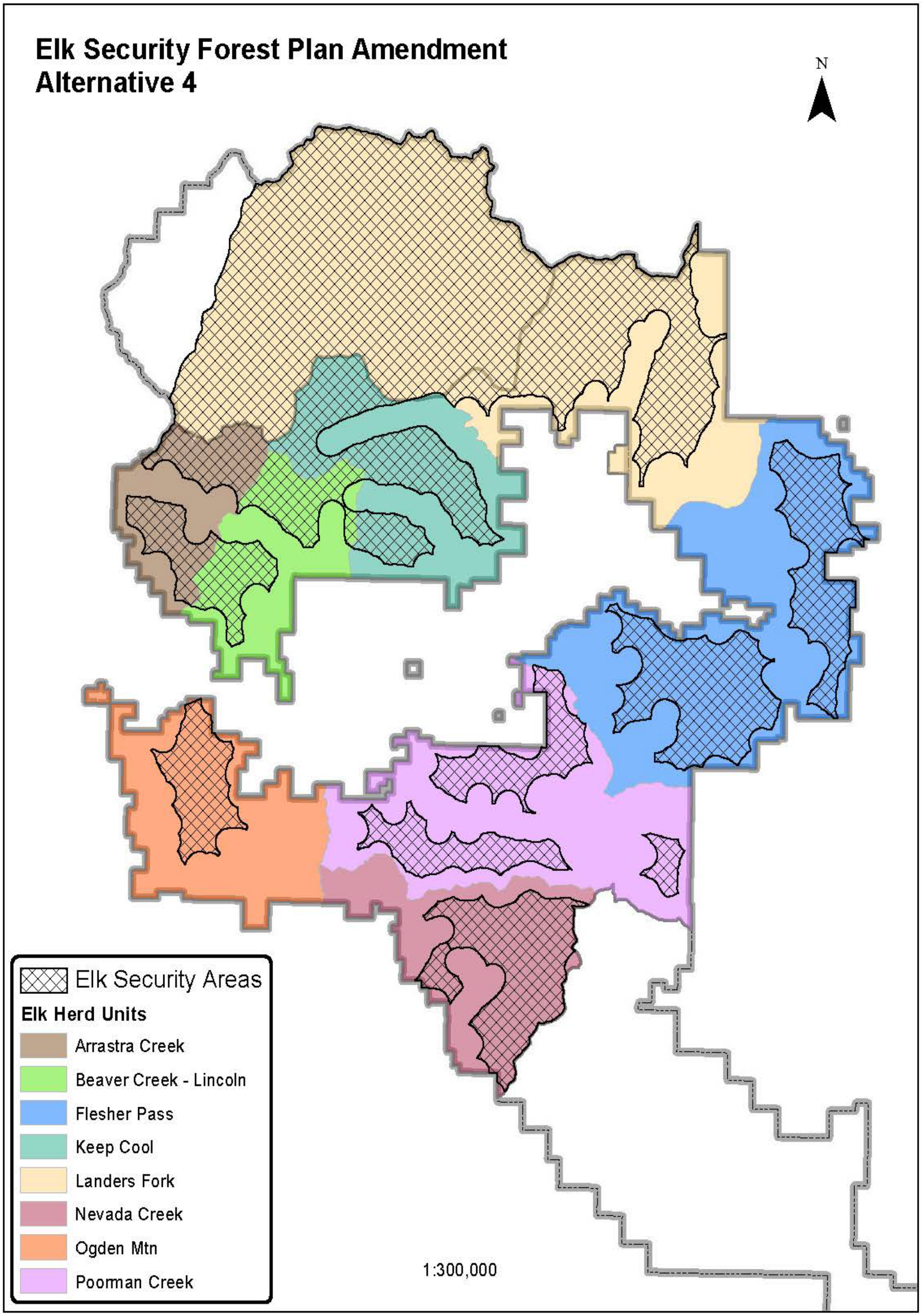

Figure 9. Elk security areas –alternative 4

Other Effects

The elk security and habitat effectiveness analyses presented above dealt primarily with motorized use on roads (and motorized trails). However, off-road recreation including OHV riding, mountain biking, horseback riding, and hiking on trails, primitive (un-paved) roads, and areas without roads or trails can also negatively impact elk and other wildlife (Wisdom et al. 2004). Since the 1970s, recreational use of public lands has increased dramatically, especially off-road recreation such as OHV riding USDA FS as cited in Naylor et al. 2009). Only recently have a few studies examined off-road effects of different types of off-road recreation in a comparative manner (Wisdom et al. 2004). In response to the rapid growth in off-road recreation, particularly OHV use on public lands which by 2004 had increased seven-fold over a twenty year period (USDA FS as cited in Wisdom et al. 2004), controlled studies were initiated at the Starkey Experimental Forest and Range in northeast Oregon as one of the first comparative studies to document elk and mule deer responses to four popular types of recreational use: OHV riding, mountain biking, horseback riding, and hiking as compared to periods of no human activity (Wisdom et al. 2004, Naylor et al. 2009).

The initial study at Starkey evaluated elk movement rates and the probability of flight responses (an energetic response to flee from the disturbance), which can adversely affect animal energy budgets; disrupt animal activity related to energy acquisition (foraging), and energy conservation (resting); and displace them from otherwise suitable habitat Wisdom (2004). This study found that among the four recreational uses both elk movement rates (distance traveled per minute) and elk flight responses were most pronounced from OHVs, followed by mountain bikes, with notably less pronounced responses from horses and hikers. Not surprisingly, the studied found the probability of flight response by elk to each of the four recreational uses was highest at close distances (i.e. less than100 meters) with the least variation in response probabilities among the four recreation types. As distances between elk and each of the four recreational uses increased the probability of flight response decreased. However with increased distance, differences in flight response probabilities between the four recreational uses also increased. The probabilities of elk flight response to each of the four recreational uses for distances of 100, 500, and 1,000 meters as reflected in Wisdom et al. (2004) are shown in the following table.

Table 85. Percent of elk flight response probability to recreational uses (Wisdom et al. 2004)

	OHV	Bike	Horse	Hike
100 meters (109 yards)	62%	58%	50%	52%
500 meters (545 yards)	43%	31%	22%	15%
1000 meters (1090 yards)	25%	13%	7%	6%
All distances from elk	19%	14%	11%	8%

As shown in table 85 higher probabilities of flight response occurred during OHV and mountain bike activity, in contrast to lower probabilities observed during hiking and horseback riding. The study found that probability of a flight response declined most rapidly during hiking, with little effect when hikers were beyond 500 meters (545 yards) from an elk. By contrast higher probabilities of elk flight continued beyond 820 yards (750 meters) from horseback riders, and 1640 yards (1,500 meters) from mountain bike and OHV riders (Wisdom 2004).

The Wisdom et al. (2004) study concluded that movement rates and probabilities of flight response for elk were substantially higher during all four off-road activities compared to control periods of no human activity. Consequently, the authors concluded, off-road recreational activities like those evaluated in the study appear to have a substantial effect on elk behavior. The authors also concluded that study results also showed clear differences in elk responses to the four off-road activities with elk responses most pronounced during OHV and mountain bike riding, and less so during horseback riding and hiking (Wisdom et al. 2004).

Ideally, areas managed for elk security would not have any roads or trails. However, as part of the compromises necessary to create a balanced approach that provides multiple recreation benefits as well as improve elk security, the Blackfoot Non-winter Travel Plan has proposed different levels of motorized and non-motorized routes within the landscape and utilizes road closures to limit motorized use and improve elk security. In developing their original elk security area concept, Hillis et al. (1991) recognized that closed roads within security areas may actually increase elk vulnerability by providing humans with walking and shooting lanes, and that the use of horses and increasing use of mountain bikes allows humans better access and increases elk vulnerability (compared to unroaded habitat). Although not ideal from an elk security standpoint, this approach attempts to control motorized use, the greatest variable affecting elk security, but recognizes that different levels of mountain bike and other recreational use does have an effect on elk security. Table 86 below summarizes the different levels of mountain bike, horseback and hiking trail development by alternative to compare the relative degree of impacts to elk security and elk vulnerability. As with roads and other motorized access, the assumption is that the greater the levels of human access via trails, the greater the potential impact on elk behavior.

Table 86. Designated road and trail mileage by alternative

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Miles of designated NFS roads	446	352	302	289
Miles of designated motorized trails	56	92	47	63
Miles of designated non-motorized trails	71	120	158	130
Miles of designated mountain bike trails	0	89	89	78

Although the greatest impacts to elk vulnerability and elk security are caused by motorized use, non-motorized use still has an impact on elk behavior. All action alternatives result in greater potential impacts from non-motorized recreation than currently exist due to the development of new non-motorized trails, especially mountain bike trails because, as shown above, mountain bikes have a greater potential to disturb elk than hikers or horseback riders.

The effects of non-motorized trails during the hunting season are anticipated to have similar effects to elk as closed roads. As suggested by Hillis et al. (1991) hunting pressure is concentrated along open roads, but close roads can increase elk vulnerability by providing walking and shooting lanes for hunters. Unsworth and Kuck (1991) note that road closures may have varied effects on animal distribution and hunter use and success. Irwin and Peek (1979) cite to several studies where road closures allowed elk to remain in more preferred sites for longer periods of time. Basile and Lonner (1979) reported that when vehicular travel was restricted, hunters spent more time walking, saw more elk, and had greater success and reported having a higher quality hunting experience.

Cumulative Effects Common to Elk for All Alternatives

Cumulative effects are the incremental impacts that the direct and indirect effects associated with the action alternatives on elk habitat in the context of the myriad of other past, present, and future effects on elk habitat from unrelated activities. The cumulative effects analysis considers spatial and temporal boundaries, how past activities have contributed to the existing condition, and whether the ecosystem can accommodate additional effects.

There are several past and ongoing activities occurring on the National Forest that affect general forested habitat. Some of these activities have or would have positive effects. For a complete list see appendix D. These include road decommissioning projects and some vegetation treatments that reduce fragmentation and increase habitat security. Overall reforestation projects are expected to be beneficial. Other activities may exacerbate fragmentation and edge effects as well as direct habitat loss. These include reopening previously closed roads, relocating roads, and some vegetation management. Vegetation management projects include HNF hazard tree removal, and proposed Stonewall and Dalton vegetation management projects, Poorman, Hogan, Helmville Face, and Alice Creek burning project. Vegetation management projects are designed to improve or maintain elk habitat. Project specific analysis addresses direct, indirect and cumulative effects.

Cumulative effects on elk have been varied. Timber harvest, road building, encroachment on habitat by human development, recreation, and hunting are activities that impact elk populations. All of these activities may occur within or immediately adjacent to, the project area during some time of the year. On federal lands, these activities are regulated, the effects analyzed, documented, reviewed by the public and other federal agencies, and mitigated accordingly. On state and private lands, less stringent oversight is mandated and these actions can cumulatively impact lynx populations on federal lands. In general, state and private lands within the cumulative effects area occur at lower elevations and provide little suitable lynx habitat.

Past timber harvest activities that clear-cut forests temporarily remove forest cover but also regenerate the forest and provide the early successional forests needed by snowshoe hares. Timber harvest may also remove security habitat that requires long time periods to regenerate. In association with timber harvest, some level of road construction typically occurs that can facilitate access into big game habitats including winter range.

Winter snowmobiling occurs on existing roads and trails or in open areas with limited forest cover or associated structural complexity at the ground level. Densely stocked stands, dense regenerating young stands that provide good hiding cover, thermal cover, and security habitat are generally not suitable for snowmobiling.

Cumulative Effects of Other Forest Plan Amendments Relative to Alternative B

Existing Amendments

There are currently 28 Forest Plan amendments of which five have had implications on Big Game standards. These five are described below.

Amendment #7 – this site-specific amendment exempts the Miller Mountain hard rock mineral exploration project (1993) from Forest Plan Big Game Standards 3 and 4(a). Approximately 590 acres were exempted from these standards associated with the construction of new roads and drill sites. Most likely, these roads do not provide hiding cover; however, they remain closed to all use. There were additional closures in Jimmy's Gulch, an area adjacent to this 1993 project. The corporation that originally conducted mineral explorations in the area is no longer active.

Amendment #21 – this site-specific amendment exempted the Jimtown Project (2001) from Big Game Standard 4(a). The wildlife analysis concluded that the existing condition was not consistent with this standard. Effects associated with this project included the removal of approximately 3 percent of the hiding cover in the Hedges Mountain herd unit.

Amendment #23 – this site-specific amendment exempted the Cave Gulch Post-Fire Salvage Project from Big Game Standard 4(a). The wildlife analysis for this project indicated that the existing condition was not consistent with standard 4(a). This was due in part to the loss of existing hiding cover from the Cave Gulch wildfire. Approximately 0.85 miles of temporary roads were built to implement the salvage sale and were subsequently decommissioned.

Amendment #26 – this site-specific amendment exempted the Fuels Reduction and Hazardous Tree Removal Project from Forest Plan Big Game Standards 3 and 4(a). The wildlife analysis for this project concluded that the existing condition for Forest Plan Standard 3 was not met within 17 of the 27 EHUs for hiding cover and none of the EHUs met Forest Plan Standard 3 for thermal cover. The existing condition for Forest Plan Standard 4(a) was not met within 22 of the 27 EHUs. Implementation of the Decision did not result in any additional EHUs being below these Forest Plan standards. The Decision resulted in minimal reductions of hiding cover within those EHUs where existing conditions were already below Forest Plan Standard 3; a 1 percent reduction in two EHUs, and less than a 1 percent reduction in all other EHUs. Twenty two EHUs did not currently meet Forest Plan Standard 4(a). The open road densities however were not a part of this decision.

Amendment #28 – exempts the Cabin Gulch Vegetation Treatment Project from the Forest Plan standards for hiding cover on summer range and the open road density standard during the hunting season (Big Game Standards 3 and 4(a) respectively, USDA 1986, pg. II/17). Overall, this project will affect elk habitat to a limited extent by removing cover within the affected EHUs. Regardless of project implementation, this loss will occur naturally over the next few years due to extensive tree mortality and natural tree fall from the insect infestation. In addition, the selected treatments may be beneficial for elk over the current situation, as they could quicken the regeneration rate of new forests. The analysis concluded that through the life of the project and with the subsequent recovery of hiding cover over time, elk habitat will remain abundant and well distributed across the Forest. Approximately 2,313 acres of hiding cover will be removed in the Cabin Creek Herd Unit which is a reduction of 6 percent from the existing condition. Approximately 190 acres of hiding cover will be removed in the North Fork Herd Unit which is less than a 1 percent reduction from the existing condition.

The Cabin Gulch Project Decision did not result in any increases in open road density during the hunting season. However, due to the removal of hiding cover within the Cabin Creek and North Fork EHUs and because both EHUs are below Forest Plan Standard 4(a) in the existing condition, the Project Decision does not meet Standard 4(a) thresholds. Mitigation measures were included from the Montana Cooperative Elk-Logging Study that will minimize project-related disturbances.

Proposed Amendments

Divide Travel Plan

The Divide Travel Plan is currently in the analysis phase with an anticipated DEIS in the winter of 2013/2014. As part of this process, the Forest would propose to programmatically amend Forest Plan Big Game Standard 4(a) to reflect updated research. The proposed programmatic amendment is still in the development phase. It is anticipated that this amendment would improve our ability to effectively manage elk habitat.

Red Mountain Flume/Chessman Reservoir Project

This project is currently in the objection phase and a decision has not yet been rendered. A site-specific amendment was prepared to exempt the project from Forest Plan Standard 3 for hiding cover on summer range for the Quartz Creek herd unit only and to exempt the project from Forest Plan Standard 4(a) for both the Black Mountain-Brooklyn Bridge and Quartz Creek herd units. The proposed amendment is a site-specific amendment and is applicable only to implementation of the decision for the Red Mountain Flume/Chessman Reservoir Project.

Telegraph Vegetation Project

The Telegraph Vegetation Project area is approximately 23,669 acres in size and is located roughly 15 miles southwest of Helena, and 5 miles south from Elliston, Montana, in the Little Blackfoot drainage west of the Continental Divide. The purpose of the project is to be responsive to the mountain pine beetle outbreak in this area, recover economic value of dead and dying trees, promote desirable regeneration, reduce fuels and the risk of wildfire, and maintain diverse wildlife habitats. In order to meet the purpose and need, a site-specific amendment exempting the project from Forest Plan Standard Big Game Standards 3 and 4(a) may be required. This project is currently in the analysis phase.

Stonewall Vegetation Project

The Stonewall Vegetation Project area is approximately 24,010 acres in size and is located on the Lincoln Ranger District, approximately 4 miles north and west of the town of Lincoln, Montana. The purpose of the project is to improve vegetative composition and structure across the landscape that is diverse, resilient, and sustainable to wildfire and insects. In order to meet the purpose and need, a site-specific amendment exempting the project from Forest Plan Standard Big Game Standards 3 and 4(a) may be required. This project is currently in the analysis phase.

Cumulative Effects Conclusions

All of the Forest Plan amendments described above with the exception of the Divide Travel Plan Amendment have been or would be site-specific in time and space. None of the past amendments has resulted in significant impacts to elk; nor should the proposed site-specific amendments significantly impact elk. Cumulatively, effects to elk hiding cover from this and other site-specific Forest Plan amendments should not compromise the Forest's ability to provide habitat potential to meet Forest Plan elk population goals.

Elk will continue to be abundant across the Forest as evidenced by the increases in elk numbers since the incipience of the Forest Plan. Elk numbers have been increasing across the west and in Montana since the early to mid- 1900s. Statewide, post-season elk numbers increased from 8,000 in 1922 to 55,000 in 1978 to about 160,000 in 2004 (MFWP pp. 4-5).

The HNF is located within several hunting districts identified by MFWP (Figure 1). The total number of elk that have been observed in these hunting districts through the 2013 aerial surveys is 14,289 (MFWP aerial survey data). Some of these hunting districts barely overlap with the HNF. Discounting those HDs, the total number of elk that have been observed on and around the Forest is 10,727 – although this is probably an underestimate because elk that occur in the 'discounted' HDs do spend some time on the Forest. Nevertheless, the number of elk associated with the HNF is well in excess of the 6,400 population target identified in the HNF Plan (USDA 1986, pg. V/5).

The programmatic amendment associated with the Divide Travel Plan effort is intended to reflect updated research and would be beneficial in terms of the Forest's ability to manage elk habitat.

This programmatic amendment will have little cumulative long-term impacts to the long-term relationship with multiple-use goods and services or have a substantive impact on the land management plan or its resources

Irreversible/Irretrievable Commitments

There are no Irreversible or Irretrievable effects associated with the action alternatives. Travel management is intended to be revised periodically and site specific actions can be taken to close roads or trails contributing to resource concerns as identified.

Regulatory Framework and Forest Plan Consistency

Compliance with Forest Plan Standard 3

Forest Plan Standard 3 (Forest Plan II/17) requires that elk summer range will be maintained at 35 percent (50% by MFWP calculations) or greater hiding cover winter thermal cover at 25 percent within Elk Herd Units.

Only 3 of 8 Elk Herd Units currently comply with HFP Big Game Standard 3. This situation does not change under any of the action alternatives. Travel components and associated access management strategies (seasonal restrictions) allow the Blackfoot Travel Plan to remain consistent with the existing hiding cover conditions and support the intent of the standard.

None of the elk Herd Units meet the 25 percent winter thermal cover standard currently and this situation does not change under any of the action alternatives. Travel components and associated access management strategies (seasonal restrictions) allow the Blackfoot Travel Plan to remain consistent with the existing thermal cover conditions and support the intent of the standard.

Compliance with Forest Plan Standard 4(a)

Forest Plan Standard 4(a) (Forest Plan II/17-18) requires that an aggressive road management program be implemented to maintain or improve big game security. Specifically, road management will be implemented to at least maintain big game habitat capability and hunting opportunity.

Two of the eight herd units currently meet Standard 4(a). The Beaver Creek subunit has sufficient hiding cover but open road density levels preclude it from complying with the standard. All three action alternatives would maintain or reduce open road densities in all herd units, with the exception of a slight (0.1 mile) road density increase in the Arrastra subunit under alternative 2, taking it further from meeting Standard 4a. Five of the herd units have substandard levels of hiding cover therefore no level of reduction in open road densities would bring them into compliance with the standard. This situation is addressed in a proposal for a site-specific Forest Plan amendment connected with this analysis.

Compliance with Forest Plan Standard 4(b)

Forest Plan Standard 4(b) requires that elk calving grounds and nursery areas be closed to motorized vehicles during peak use by elk. This is usually from late May through July.

All 3 action alternatives restrict motorized use in known calving and nursery areas through yearlong or seasonal closures. If additional elk calving and nursery areas are identified prior to or during project implementation, these areas will be protected.

Compliance with Forest Plan Standard 4(c)

Forest Plan Standard 4(c) (Forest Plan II/18) requires that all winter ranges will be closed to vehicles between December 1 and May 15. Exceptions (i.e. access through winter range to facilitate land management or public use on other lands) may be granted.

None of the action alternatives would increase motorized use in winter range through yearlong or seasonal closures. Motorized use during the winter period would be restricted to existing designated routes.

Summary and Determination of Effects

Each of the action alternatives result in maintaining or reducing overall road mileage and density within each Elk Herd Unit, and would result in an overall improvement in elk security as measured by the proposed Forest Plan amendment for a revised elk security metric. This increase in security is not reflected with the current Big Game Standard 4a, which is the reason a revised standard is proposed in conjunction with this analysis. Alternative 3 results in the highest level of improvement, followed in order by alternative 4 and alternative 2.

Mule Deer

Direct and Indirect and Cumulative Effects All Alternatives

Direct, indirect, and cumulative effects for mule are similar to those described for elk. See Elk section above.

Summary and Determination of Effects

This project would have no significant effect on mule deer or other hunted species under any alternative. All action alternatives would benefit mule deer by reducing open road densities and improving security habitat. Among all alternatives, alternative 3 would result in the greatest benefit to hunted species due to lower open motorized route densities during the hunting season. Among action alternatives, alternative 2 would result in the greatest distribution and duration of motorized use thus having greater potential to impact hunted species and their habitats than alternatives 3 and 4. The impacts of alternative 4 are in between alternatives 2 and 3 due to the extended duration of motorized use.

Marten

General Effects of Roads to the Marten

Indirectly, roads negatively impact marten habitat by providing access routes for firewood cutters, who remove snags and logs. Snags and coarse woody debris (stumps, logs, and large woody fragments) provide critical habitat components for marten foraging, resting, and denning (Spencer 1987; Buskirk et al. 1989; Coffin 1994).

Roads also facilitate trapping. Trapping affects marten populations by altering the sex and age structure, disproportionately capturing juveniles and males, as well as lowering local population density (Hodgman et al. 1994). In some drainages marten can be completely eliminated (at least in the short term) by persistent trapping. Roads in forested areas increase trapping pressure on marten and result in higher capture rates in roaded versus unroaded areas. Thompson (1994) found that the increased impacts of trapping in logged sites as opposed to unlogged areas were a direct result of the higher road densities generated by logging operations (and the access provided primarily to trappers on over-snow vehicles).

Direct and Indirect Effects - Alternative 1

Maintaining the status quo under alternative 1 would have no direct effect on marten habitat since there would be no mandate to construct new roads. Likewise, there would be no increase in the potential for indirect effects resulting from removal of large snags. Snag removal in the road corridors by firewood cutters and under the proposed HNF hazard tree removal program would increase in the near future because of the proliferation of dead trees generated by ongoing bark beetle infestations. This increase, however, is not a function of this alternative.

Direct and Indirect Effects - Alternatives 2, 3, and 4

Effects on marten stem from removal of snags and woody debris from the road corridor by firewood cutters and from routes available to trappers on over-snow vehicles. Given the acreage of snags being created by bark beetles across the landscape, losses in the road corridor would be relatively minor.

Marten do not like to cross broad open areas; however, they show little reluctance to cross Forest roads, groomed over-snow vehicle trails, or paved highways (Coffin et al. 2002). As with wolverines and fishers, marten are not averse to crossing roads and motor trails or using them as travel routes in winter as long as they are associated with a reasonable degree of mature forest cover. Overall, research has revealed no obvious relationship, positive or negative, between marten habitat use and open road density. High-traffic roads that run through mature forests with abundant deadfall may reduce the attractiveness of otherwise suitable sites for birthing and raising young but probably do not prohibit their use as hunting and resting areas.

As is the case with lynx, wolverines, and fishers, one of the primary threats that open roads pose to marten comes from their role as over-snow vehicle routes used by trappers in winter. Marten are the most common target of trappers (Buskirk and Ruggiero 1994). Trapping intensity waxes and wanes with the trajectory of fur prices, and trapping mortality is periodically a more important determinant of marten population density than is habitat availability. Trapping can be a significant source of mortality where over-snow vehicle routes pass through riparian bottoms, old-growth stands, and other complex forested habitats (Buskirk and Ruggiero 1994).

Snag removal by firewood cutters working the road corridors represents a loss of habitat components important to marten. The abundance of standing and downed dead trees is one of the significant factors allowing marten to occupy a forest stand.

Modeled habitat identifies approximately 63,104 acres of virtually contiguous potential marten habitat across the Blackfoot landscape, enabling martens to roam between these linkage habitats across the landscape.

Table 87 and table 88 show the miles and affected acres of new road/trail construction and road decommissioning within marten habitat. Alternative 2 would be the least impact at 0.6 miles of new construction, affecting 44 acres of marten habitat. Alternative 4 would be the most beneficial by decommissioning over 48 miles, affecting almost 3,500 acres of marten habitat. Alternative 3 has the shortest season of use dates on certain roads, compared to all the other alternatives. This would benefit marten by decreasing access to woodcutters and decreasing disturbance.

Table 87. New road or trail construction mileage and designation within marten habitat in planning area by alternative

Road or trail number	Road or trail mileage within marten habitat	Alternative 2 Road or trail designation	Alternative 3 Road or trail designation	Alternative 4 Road or trail designation
1841-D1-New2	0.2	NA	Motorized	Motorized
U-New-4090	0.2	NA	Motorized	Motorized
U-New-4043	0.3	Motorized	Motorized	Motorized
U-New-4	0.2	Motorized	Motorized	Motorized
U-427	0.1	Motorized	Motorized	Motorized
U-New-6	0.02	NA	NA	Motorized
U-New-4090	0.1	NA	Motorized	Motorized
Total	1.12			

Table 88. Miles and affected acres of new road/trail construction and road decommissioning within marten habitat

Activity	Alternative 2	Alternative 3	Alternative 4
New road/trail construction (miles/acres)	.6/44	1.1/80	1.12/81
Decommisssioning (miles/acres)	43/3,127	43/3,127	48/3,491

Cumulative Effects Common to the Marten, for All Alternatives

Past timber harvest throughout the Blackfoot landscape, has removed substantial acreages of mature and old-growth forest capable of providing primary marten habitat—particularly projects that have intruded into riparian forest. Primary actions that have locally reduced the effectiveness of potential marten habitat by providing access for trappers and firewood cutters include retention of groomed over-snow vehicle trails and roads passing through forested riparian habitat.

Actions that have improved prospects for marten include: closure of inventoried roadless areas to snowmobile use; trail relocation projects that have removed trails from productive riparian areas to upslope locations; establishment of the Tri-State OHV Plan, which prohibits riding off established motor routes; road and motor trail closures associated with projects that have measurably expanded blocks of non-motorized habitat. Recent and ongoing private land development (building construction, clearing, thinning, commercial timber harvest, dead tree salvage) would continue to impact potential marten habitat, particularly where it occurs in forested riparian areas. Actions that reduce significant habitat components—large snags and logs, and overhead cover—could have an effect.

Reasonably foreseeable activities on HNF land that could affect marten to one degree or another include salvage projects designed to deal with the ongoing bark beetle epidemic which, if implemented, would remove substantial numbers of large dead trees that could be of use to marten. In addition, travel planning efforts underway on adjacent Forests, as well as the Lincoln Ranger District on the HNF, could be beneficial to marten if they provide local sanctuaries free from motorized access. Because marten are capable of traveling some distance, better habitat conditions on other Forests could improve marten populations and subsequent dispersal opportunities to the Helena National Forest. Conversely, travel management decisions elsewhere could reduce marten populations in those areas and reduce the potential for emigration/immigration. Future activity on non-Forest land within the cumulative effects area that could affect marten includes: Settlement and associated development of private lands and timber harvest and removal of large beetle-killed dead trees.

There are several past and ongoing activities occurring on the National Forest that affect general forested habitat. Some of these activities have or would have positive effects. For a complete list see appendix D. These include road decommissioning projects and some vegetation treatments that reduce fragmentation and edge effects. Overall reforestation projects are expected to be beneficial. Other activities may exacerbate fragmentation and edge effects as well as direct habitat loss. These include reopening previously closed roads, relocated roads, and some vegetation management. Vegetation management projects include HNF hazard tree removal, Poorman burn, and proposed Stonewall and Dalton vegetation management, Helmville Face, and Alice Creek burning project. Project specific analysis addresses direct, indirect and cumulative effects.

Determination of Effects, for All Alternatives

This project would have no significant effect on mature habitat or population viability for this management indicator species under any alternative.

Northern Goshawk

General Effects of Roads to the Northern Goshawk

Construction of a new Forest road into nest stands and post-fledging areas can negatively impact resident goshawks by introducing regular human activity into sites causing the birds to defend these areas. As well, it can eliminate significant habitat components (nest trees, perch sites, snags and logs used by prey species). Regular human activity in the vicinity of a nest may cause goshawks to abandon the site (Reynolds et al. 1992). But most often, while not abandoning the nest, goshawks will exert much more energy defending it and fledglings, than they would under normal circumstances. This diversion of time and energy can negatively impact their ability to successfully raise and fledge young (Morrison et al. 2011). The presence of a road may also eliminate the stand as suitable nesting habitat in the future. Since high-quality nesting habitat is often a primary limiting factor for goshawks, new road systems that push into these areas can erode the overall habitat quality of a goshawk home range. Reopening closed roads or trails to motorized use can have a similar impact.

A recent analysis in the Lake Tahoe Basin of California suggests that goshawks avoid placing nests near roads, based on the intensity of traffic that they experience in a previous year (Morrison et al. 2011). Fieldwork on the HNF, however, has shown that goshawks will establish nests relatively close (within a few hundred feet) to existing roads (Sweeney Creek, Jimtown, Kelly Gulch, Cottonwood Gulch, Spring Gulch, South Fork Quartz Creek, Elliston Creek, Minnehaha Creek) as long as most human activity predictably remains in the road or trail corridor.

Direct effects on goshawk habitat include removal of mature forest cover useful as goshawk nesting habitat during road construction. While habitat loss is inevitably a threat to goshawks, significant impacts derive from large-scale phenomena such as logging and fire, not road construction. Human activity associated with road construction has the potential to displace goshawks from active nests that they had considered adequately buffered from human intrusion.

Other indirect effects associated with roads are removal of large snags in the road corridor by firewood cutters and, as is now occurring, by the HNF roadside hazard tree crews. Dead trees provide habitat for cavity nesters, a number of which serve as prey for goshawks. Reynolds et al. (1992) considered snags to be a primary component of goshawk nesting and foraging habitat and included them in guidelines for optimal goshawk home ranges.

Direct and Indirect Effects - Alternative 1

Alternative 1 would retain the existing condition. There would be no direct effects on goshawks since there would be no new road construction tied to implementation of the alternative. As a result, there would be no increased potential for indirect effects resulting from removal of large snags. Snag loss to firewood cutting and the proposed HNF hazard tree program would increase in the near future because of the proliferation of dead trees generated by ongoing bark beetle infestations. This increase, however, would not result from implementation of alternative 1.

Direct and Indirect Effects - Alternatives 2, 3, and 4

Table 89 shows the current nest locations and activity distance from them and what activity under each alternative would occur. While foraging goshawks spend most of their time in mature forest environments, they frequently cross open roads and may use a road corridor as a convenient flyway when the forest presses in closely on either side or traffic is infrequent.

Table 89. Distance of activity under each alternative to established goshawk nest sites

Goshawk Nest	Distance from activity (miles)	Alternative 2	Alternative 3	Alternative 4
Ward Creek	0.20	Closed to motorized use yearlong	Decom	Decom
SWNOGONest	0.45	Closed to motorized use yearlong	Decom	01-Sto
Stonewall East	1.80	New MT construction	New MT construction	Non-motorized
Wasson Creek	0.12	Open hwy legal	Decom	01-Res-Sto
Dalton 2009	1.10	Open hwy legal	Decom	01-Res-Sto
Indian Creek	0.30	NMTR	NMTR-FS	NMTR-FS

Indirectly, roads negatively impact goshawk habitat through disturbance associated with the human activity that comes with them. Goshawks are sensitive to human presence near nest sites and can be very aggressive in defending both the nest and the larger area within which newly fledged young are operating (post-fledging family area—the PFA). Goshawks nesting in areas near established roads show a tolerance of existing conditions (table 89). Closing the roads to motorized use and decommissioning under both alternatives would only result in beneficial effects to goshawk and habitat.

Table 90 shows the miles and affected acres of new road/trail construction and road decommissioning within goshawk nesting and foraging habitat: Alternative 2 would cause the least amount of disturbance and habitat acres affected with approximately 1.4 miles of new road/trail construction, affecting 102 acres of habitat, while alternative 4 would be the most beneficial with 131 miles of road being decommissioned, thereby affecting 9,527 acres of habitat. Alternative 3 has the shortest season of use dates on certain roads, compared to all the other alternatives. This would benefit goshawk by decreasing disturbance, and thereby possibly increasing reproductive success.

Table 90. Miles and affected acres of new road/trail construction and road decommissioning within goshawk habitat

Activity	Alternative 2	Alternative 3	Alternative 4
New road/trail construction (miles/acres)	1.4/102	2.7/196	2.7/196
Decommissioning (miles/acres)	6.5/473	125/9,091	131/9,527

Cumulative Effects Common to the Northern Goshawk for All Alternatives

Past timber harvest in the Blackfoot landscape, has removed thousands of acres of mature and old-growth forest over the last 30 years, much of which provided nesting and foraging habitat for goshawks. For the short- and mid-term, these projects have depleted suitable goshawk habitat.

A few recent timber harvest and thinning projects have emphasized retaining large trees in open-grown stands and allowing them to continue to grow in forest configurations less likely to succumb to stand-replacing fire. The ongoing HNF firewood policy that allows members of the public to take up to 10 cords of dead wood within reach of Forest roads continues to result in the removal of most large snags and intact logs from the road corridors.

Recent and ongoing private land development (building construction, clearing, thinning, timber harvest, dead tree salvage) has variable effects. Traditional clearcut logging and overstory removal eliminate potential goshawk habitat; thinning projects—many of them aimed at reducing fuel loading for fire protection—may retain foraging habitat over the long term.

Reasonably foreseeable activities on HNF land that could affect goshawks to one degree or another include salvage projects designed to deal with the ongoing bark beetle epidemic, which would remove substantial numbers of large dead trees that could continue as components of goshawk foraging habitat. The effect, as related to the salvage cutting, would be of short duration, since the dead trees would fall of their own accord within a few years, reducing the suitability of the habitat for goshawks. Any of these projects that are able to retain mature trees in open-grown formations are likely to retain long-term foraging habitat.

Future activity on non-Forest land within the cumulative effects area that could affect goshawks includes continuing timber harvest on private, State, and BLM lands—dominated by thinning for fire protection and salvage of beetle-killed dead trees.

There are several past and ongoing activities occurring on the National Forest that affect general forested habitat. Some of these activities have or would have positive effects. For a complete list see appendix D. These include road decommissioning projects and some vegetation treatments that reduce fragmentation and edge effects. Overall reforestation projects are expected to be beneficial. Other activities may exacerbate fragmentation and edge effects as well as direct habitat loss. These include reopening previously closed roads, relocated roads, and some vegetation management. Vegetation management projects include HNF hazard tree removal, Poorman burn, and proposed Stonewall and Dalton vegetation management, Helmville Face, and Alice Creek burning project. Project specific analysis addresses direct, indirect and cumulative effects.

Summary and Determination of Effects for All Alternatives

This project would have no significant effect upon old growth habitat, potential nesting, foraging habitat or population viability for the northern goshawk under any alternative. Effects under all alternatives would be indirect and rather insubstantial—arising from loss of snags and woody debris in the road corridor to firewood gatherers. This would represent a loss of habitat structure for potential prey species. Differences between alternatives are insufficient to be reflected in different levels of local goshawk occupancy.

Pileated Woodpecker

General Effects of Roads to the Pileated Woodpecker

A potential direct effect of road construction is habitat fragmentation. Rosenberg and Raphael (2000) found that pileated woodpeckers are associated with forest edges but are moderately intolerant of small forest islands. The association of pileated woodpeckers with edge, however, is based on studies of the juxtaposition of mature forest and clearcuts, not the narrow strip-edges created by Forest roads. These strips do not really create isolated “islands” of forest habitat, and as a result, the “fragmentation” effect of forest roads should have little or no influence on pileated woodpecker habitat use patterns; nor are the road edges likely to be substantial enough to attract woodpeckers.

Research has not demonstrated that pileated woodpeckers avoid otherwise suitable nesting habitat because of the presence of Forest roads, but intuitively, it seems a real possibility—at least in areas immediately adjacent to regularly-used roads. In general, foraging woodpeckers do not appear averse to making use of habitat near open roads if large dead trees are present there [personal observation]. But none of this has been studied in enough detail to be quantified. Vehicle traffic, with its associated noise, vibration, and visual disruption, is the primary problem (Forman et al. 2003), and the degree to which pileated woodpeckers may avoid nesting near roadside habitat is undoubtedly a function of the volume and regularity of vehicle use.

Direct and Indirect Effects - Alternative 1

Road proposals in this alternative would create no new opportunities for removal of large snags from the road corridor. Snag loss to firewood cutting and under the HNF hazard tree removal program would increase in the near future because of the proliferation of dead trees generated by ongoing bark beetle infestations. No increase, however, would result from implementation of this alternative.

Direct and Indirect Effects - Alternatives 2, 3, and 4

Modeled habitat identifies approximately 65,728 acres of potential pileated woodpecker habitat and is composed of numerous smaller polygons creating a virtually continuous habitat across the Blackfoot landscape. Edge effects from open and closed roads would be identical to those under alternative 1, and they would be negligible.

Few snags in the corridor are large enough (in the 30-inch d.b.h. range) to provide nesting or roosting sites for pileated woodpeckers; and as a result, only a minimal amount of this component would the lost. Many smaller trees on which woodpeckers might feed, however, are likely to be removed.

Table 91 and table 92 show new road or trail construction and road decommissioning within pileated woodpecker habitat. Alternative 2 at 0.6 miles of new construction affecting 44 acres of habitat would provide the least impact. Since such minimal new construction would occur under any alternative the effects would be insignificant on the landscape. Under alternative 4, 55 miles of road would be decommissioned; affecting 4,000 acres of habitat, this alternative would provide the most protection. Alternative 3 has the shortest season of use dates on certain roads, compared to all the other alternatives. This would benefit pileated woodpecker by decreasing disturbance, and reducing the roadside area susceptible to snag depletion by firewood cutters.

Table 91. New road or trail construction mileage and designation per alternative within pileated woodpecker habitat in planning area

Road or trail number	Road or trail mileage within pileated wp habitat	Alternative 2 Road or trail designation	Alternative 3 Road or trail designation	Alternative 4 Road or trail designation
1841-D1-New2	0.2	NA	Motorized	Motorized
U-New-4090	0.2	NA	Motorized	Motorized
U-New-4043	0.3	Motorized	Motorized	Motorized
U-New-4	0.2	Motorized	Motorized	Motorized
U-427	0.1	Motorized	Motorized	Motorized
U-New-1892	0.2	NA	NA	Motorized
Total	**1.2**			

Table 92. Miles and affected acres of new road/trail construction and road decommissioning within pileated woodpecker habitat

Activity	Alternative 2	Alternative 3	Alternative 4
New road/trail construction (miles/acres)	0.6/44	1.0/73	1.2/87
Decommissioning (miles/acres)	2.6/189	50/3,636	55/4,000

Virtually all potential effects emerging from the proposed alternatives would be indirect—a result of human use of the road system: displacement of woodpeckers from roadside habitat, and loss of roadside snags to firewood cutting.

The primary indirect effect generated by all alternatives would result from the loss of large dead trees in the road corridor to firewood cutting or to Forest Service roadside hazard tree removal projects. Large diameter dead and dying trees are significant habitat components for pileated woodpeckers in whatever forest configuration they occur. Mountain pine beetles are in the process of producing numerous large snags within reach of Forest roads throughout pine forests. The larger snags preferred by pileated woodpeckers for nesting and roosting (preferably > 30 inches d.b.h.) occur almost entirely in ponderosa pine stands; they are highly unlikely in lodgepole pine forests. Some may be found in whitebark pine forests, but few, if any of these stands provide pileated woodpecker habitat or are traversed by open Forest roads.

Cumulative Effects Common to the Pileated Woodpecker, for All Alternatives

Past timber harvest in the Blackfoot landscape, has removed a substantial acreage of mature and old-growth forest in which large-diameter conifers were prominent components. Overall, these projects have depleted suitable pileated woodpecker habitat.

A few recent timber harvest and thinning projects have emphasized retaining large trees in open-grown stands and allowing them to continue to grow in forest configurations less likely to succumb to stand-replacing fire. Over the long term, these projects benefit pileated woodpecker habitat. The ongoing HNF firewood policy that allows members of the public to take up to 10 cords of dead wood within reach of Forest roads continues to result in the removal of most large snags and intact logs from the road corridors.

Recent and ongoing private land development (building construction, clearing, thinning, commercial timber harvest, dead tree salvage) has variable effects. Traditional clearcut logging and overstory removal eliminate habitat for pileated woodpeckers; thinning projects—many of them aimed at reducing fuel loading for fire protection—are generally beneficial.

Reasonably foreseeable activities on HNF land that could affect pileated woodpeckers to one degree or another include salvage projects designed to deal with the ongoing bark beetle epidemic by removing substantial numbers of large dead trees that could be of use to pileated woodpeckers. On the other hand, those projects that retain mature trees in open-grown formations are likely to benefit the birds over the long term.

Future activity on non-Forest land within the cumulative effects area that could affect pileated woodpeckers includes settlement and associated development of private lands—often clearing that involves removal of large trees—and clearcut/overstory removal timber harvest and removal of large beetle-killed dead trees.

There are several past and ongoing activities occurring on the National Forest that affect general forested habitat. Some of these activities have or would have positive effects. For a complete list see appendix D. These include road decommissioning projects and some vegetation treatments that reduce fragmentation and edge effects. Overall reforestation projects are expected to be beneficial. Other activities may exacerbate fragmentation and edge effects as well as direct habitat loss. These include reopening previously closed roads, relocated roads, and some vegetation management. Vegetation management projects include HNF hazard tree removal, Poorman burn, and proposed Stonewall and Dalton vegetation management, Helmville Face, and Alice Creek burning project. Project specific analysis addresses direct, indirect and cumulative effects.

Summary and Determination of Effects, for All Alternatives

This project would have no significant effect upon old growth habitat, snag habitat or population viability for the pileated woodpecker under any alternative. Differences between alternatives, in terms of road corridor available to firewood cutting, would not be large enough to show up as differences in the ability of pileated woodpeckers to occupy the landscape. Potential nesting trees (ponderosa pine snags greater than 25 inches d.b.h.) that might be removed are rare in the road corridor, and given the proliferation of beetle-killed trees in pine forests across the landscape, nesting habitat would be less limiting than in the past regardless of the alternative selected here.

Hairy Woodpecker

General Effects of Roads to the Hairy Woodpecker

Hairy woodpeckers are directly impacted by the road/trail system when new road construction eliminates significant habitat components—namely, dead, dying, and other insect-prone trees. Dead trees in the open road corridors would be lost to firewood cutting and to roadside hazard tree removal by Forest Service crews. Bark beetle infestations are in the process of producing an abundance of snags within reach of Forest roads throughout Blackfoot pine forests. For hairy woodpeckers, already relatively common in the landscape, this is an expansive habitat opportunity throughout all pine forests at all elevations, and these birds are likely to proliferate over the next 15-20 years.

The Region-1 model presents a narrow construct of hairy woodpecker habitat—focusing on mature forest stands (with overstory trees greater than10 inches d.b.h.) of sparse/intermediate density (less than 50 percent canopy closure) with numerous dead trees (at pre-beetle outbreak levels). Stands of this sort provide ideal nesting and foraging habitat for hairy woodpeckers. However, this model appreciably underestimates the reach of suitable hairy woodpecker habitat in the Blackfoot landscape. In fact, hairy woodpeckers appear in virtually all forested habitats on the HNF other than seedling/sapling stands devoid of residual snags. Although they are most common in environments with a plethora of dead and dying trees, they are often seen in stands that appear relatively healthy, as long as enough insect-supporting trees are present. They also forage in stands dominated by pole-sized trees, although they may be unable to nest there.

As with the other woodpeckers reviewed in this report, hairy woodpeckers appear to suffer no meaningful effects from the presence of open roads and motor trails in their home ranges. Human presence, motorized or otherwise, does little to alter the birds' normal habitat use patterns (Hamann et al. 1999).

Other indirect effects are more substantive: Virtually any accessible solid dead tree (pole-sized and up) in the road corridor (estimate. at 300 ft. on either side of the road) would be removed by firewood cutters or, less often, by HNF personnel as roadside hazard trees. This represents an inevitable loss of significant habitat components within open road corridors for hairy woodpeckers and other dead tree dependent species for which they serve as an indicator. Because hairy woodpeckers are mobile and range widely, loss of significant components within road corridors may amount to little. The relative significance of the loss depends on the availability of snags in areas outside the road corridor. In current circumstances, the proliferation of beetle-killed pine trees across the landscape renders snag loss in the road corridor inconsequential.

Direct and Indirect Effects - Alternative 1

Road and trail proposals in this alternative (which maintain the status quo) would generate no new potential for removal of large snags. Snag removal by firewood cutters and under the proposed HNF hazard tree removal program would increase along existing open roads in the near future because of the proliferation of dead trees generated by the ongoing bark beetle infestation. This increase, however, would not result from implementation of this alternative.

Direct and Indirect Effects - Alternatives 2, 3 and 4

Modeled habitat identifies approximately 65,797 acres of potential hairy woodpecker habitat and is composed of an infinite number of small polygons creating a virtually contiguous habitat across the Blackfoot landscape. Edge effects from open and closed roads would be identical to those under alternative 1, and they would be negligible.

Table 93 shows new road or trail construction within hairy woodpecker habitat. Under alternative 2, 0.6 miles of new construction would occur, compared to alternative 3 where 1.0 miles of new construction would occur and alternative 4 where 1.2 miles of new construction would occur. Since such minimal new construction would occur under any alternative the effects would be insignificant.

Table 93. New road or trail construction mileage and designation per alternative within hairy woodpecker habitat in planning area

Road or Trail Number	Road or Trail Mileage within Hairy Woodpecker Habitat	Alternative 2 Road or Trail Designation	Alternative 3 Road or Trail Designation	Alternative 4 Road or Trail Designation
1841-D1-New2	0.2	NA	Motorized	Motorized
U-New-4090	0.2	NA	Motorized	Motorized
U-New-4043	0.3	Motorized	Motorized	Motorized
U-New-4	0.2	Motorized	Motorized	Motorized
U-427	0.1	Motorized	Motorized	Motorized
U-New-1892	0.2	NA	NA	Motorized
Total	**1.2**			

Table 94 shows the miles and affected acres of new road/trail construction and road decommissioning within hairy woodpecker habitat: Approximately 0.6 miles of road under alternative 2, affecting 44 acres, approximately 1.1 miles of road under alternative 3, affecting 80 acres, and under alternative 4, affecting 87 acres within hairy woodpecker habitat. Table 94 also shows that under alternative 2, 2.6 miles of road would be decommissioned, affecting 189 acres, compared to alternative 3, where 50 miles of road would be decommissioned, affecting 3,636 acres and alternative 4 where 55 miles of road would be decommissioned affecting 4,000 acres. This would benefit hairy woodpecker by decreasing disturbance, and reducing the roadside area susceptible to snag depletion by firewood cutters.

Table 94. Miles and affected acres of new road/trail construction and road decommissioning within hairy woodpecker habitat

Activity	Alternative 2	Alternative 3	Alternative 4
New road/trail construction (miles/acres)	0.6/44	1.1/80	1.2/87
Decommissioning (miles/acres)	2.6/189	50/3,636	55/4,000

Cumulative Effects Common to the Hairy Woodpecker for All Alternatives

Timber harvest over the past 30 years, primarily via clearcutting and other regeneration harvest methods, has removed substantial acreages of hairy woodpecker habitat. Residual snags in some of these areas have continued to support woodpeckers, but, overall, the habitat quality has declined. A few recent timber harvest and thinning projects have emphasized retaining large trees, as well as snags, in open-grown stands and allowing them to continue to grow in forest formations less likely to succumb to stand-replacing fire. Over the long term, these projects benefit hairy woodpeckers.

Recent and ongoing activities on the National Forest that have improved prospects for snags and consequent habitat opportunity for hairy woodpeckers are the road closures associated with a number of timber harvest projects which limit roadside firewood cutting. These projects have all adhered to Forest Plan standards for retaining snags and replacement snags. In some cases, decisions not to pursue potential salvage opportunities have resulted in retention of large blocks of snags.

The ongoing policy of allowing public firewood cutting on the National Forest is the primary factor driving the removal of most large snags from Forest road corridors. Ongoing efforts by the HNF to limit the potential safety hazard posed by large numbers of dead trees in areas frequented by the public have accelerated the process of snag loss in road corridors and other accessible sites. These actions have also reduced the number of snags available to firewood cutters. Hazard tree removal projects have recently been completed or are going forward at a number of campgrounds, administrative sites, as well as along open Forest roads.

Recent and ongoing private land development—particularly clearing, thinning, commercial timber harvest, and dead tree salvage has had variable effects. Traditional clearcut logging and overstory removal, eliminate most habitat components for hairy woodpeckers; thinning projects—many aimed at reducing fuel loading for fire protection—preserve some habitat, but generally lower suitability because of the elimination of dead and dying trees.

The most prominent foreseeable activities on HNF land that could affect hairy woodpeckers to one degree or another are salvage projects designed to deal with the ongoing bark beetle epidemic—removing substantial numbers of dead trees that could be of useful habitat components. On the other hand, those projects that retain mature trees in open-grown formations are likely to benefit the woodpeckers over the long term.

Future activity on lands of other ownership within the cumulative effects area that could affect hairy woodpeckers includes settlement and associated development of private lands that involves timber harvest and removal of beetle-killed dead trees.

There are several past and ongoing activities occurring on the National Forest that affect general forested habitat. Some of these activities have or would have positive effects. For a complete list see appendix D. These include road decommissioning projects and some vegetation treatments that reduce fragmentation and edge effects. Overall reforestation projects are expected to be beneficial. Other activities may exacerbate fragmentation and edge effects as well as direct habitat loss. These include reopening previously closed roads, relocated roads, and some vegetation management. Vegetation management projects include HNF hazard tree removal, Poorman burn, and proposed Stonewall and Dalton vegetation management, Helmville Face, and Alice Creek burning project. Project-specific analysis addresses direct, indirect and cumulative effects.

Summary and Determination of Effects, for All Alternatives

No significant effect upon snag habitat or population viability for the hairy woodpecker would occur under any of the alternatives. The only effects on hairy woodpeckers would be indirect—resulting from removal of dead trees from the road corridors by firewood cutters. Given the vast acreage of snags being created by bark beetles across the landscape, losses in the road corridor would be insignificant, and differences between alternatives, in terms of woodpecker numbers, would be undetectable.

Species of Concern

Mountain Goat

Direct and Indirect Effects - Alternatives 1 through 4

Potential project related effects are predominantly associated with disturbance and/or displacement of goats due to OHV use. The greatest concern for potential impacts to mountain goats includes the Stonewall and Red mountain areas and the connecting ridgeline. From late fall through early spring the population is largely confined to the Stonewall and Red Mountain areas due to snowpack. Although individuals from this population have been known to occur in the head of Arrastra creek and different parts of the wilderness during the summer months these areas are not addressed in detail in this analysis due to the lack of motorized access and the lack of consistent or concentrated use by goats. None of the alternatives would change motorized access in these secondary habitats so future use by goats would not be affected. The Stonewall and Red mountain areas receive the greatest concentrated use by the goat population due to the presence of steep cliff faces that provide both cover and forage. The connecting ridgeline between these primary use areas serves as a movement corridor between the Stonewall and Red Mountain subpopulations. While the connecting ridgeline supports suitable forage for mountain goats much of it lacks the steep rugged cliff faces goats prefer as security cover from predators and other disturbances, thereby limiting persistent use.

All alternatives allow OHV access to the Stonewall mountain lookout via trail #417. Under alternatives 1 and 2 there are no seasonal restrictions for trail #417 allowing motorized use as long as snow conditions allow; alternative 3 restricts OHV use from 9/1 to 6/30, and alternative 4 would restrict use from 10/15 to 6/30. In most years persistent snow pack precludes wheeled motorized use until late June or early July. From Stonewall peak, trail U-330-B1 which exists as a poorly defined single track trail extending north into Cotter basin, is closed under all alternatives. Some limited, infrequent single track use has been known to occur on this trail in the past. Alternatives 1 and 2 would maintain this trail as closed while alternatives 3 and 4 would decommission the trail having the greatest potential to preclude unclassified use. The greatest potential of unclassified use of this trail to impact goats is primarily associated with that portion of the trail descending off Stonewall Mountain where goats are known to occur. Some occasional goat use may occur along the lower reaches of the trail near Cotter Basin although the most noted use has been on top and on the north face of Stonewall Mountain.

OHV access to the Stonewall peak area is known to temporarily displace mountain goats as observed by the Stonewall summer fire lookout. Observed responses suggest the goats are able to hear approaching OHVs well in advance and casually recede over the steep cliff face before the OHVs reach the top. Based upon observed responses to approaching OHVs by the Stonewall lookout; reproductive success and growth of the overall population; forage abundance and availability during the summer months and; the fact that energy expenditure relative to thermal regulation is much less important than during the winter, summer OHV use of the Stonewall peak area does not appear to have a substantive negative affect upon individuals, the population or overall use of the area. However, this goat population has just recently become established as the result of releases in 2002 and 2005.

The population is still small, and many other populations in the State are experiencing declines for reasons not well understood at this time. As proposed under alternative 3, restricting OHV use during the fall period would likely benefit goats in the Stonewall area during the time when accumulating and maintaining fat reserves prior to the breeding season and harsh winter months is more critical. The lack of disturbance during the fall months would help reduce energy expended in response to disturbance and allow unimpeded utilization of available forage in the area.

Currently there is no established hunting season for the mountain goat population in the project area. There is a risk of illegal harvest however which was believed to be contributing factor to the loss of the original population of goats in the area. That risk is likely lowest during the summer months when OHV and other recreational use is highest increasing the potential for detection of illegal activities. The pelage of mountain goats is also at its least desirable trophy value during the summer months when the previous winters coat is shed for a shorter summer coat. In the Stonewall area where the risk of illegal harvest may be greatest due to OHV accessibility and habituation of the subpopulation to OHVs, the presence of summer lookout personnel would help minimize the risk for fear of detection. By the fall big game season however, the pelage of goats is in prime condition, OHV traffic to Stonewall lookout declines, the lookout tower is generally unoccupied, and carrying a weapon is commonplace. Therefore, it is reasonable to expect that restricting OHV use of trail #417 after 9/1 as proposed in alternative 3 would serve to substantially reduce the risk of illegal harvest. The existing condition as well as alternatives 2, 3, and 4 limit OHV access to the head Copper creek from 9/1 to 6/30 minimizing the risk of illegal harvest in that area.

Another access change proposed in both alternatives 2 and 3, involves trail #485 that extends from Stonewall creek across the head of the Copper creek drainage to its junction with route #771 at Copper Camp Mine. Under alternatives 2, 3 and 4 this trail would become a non-motorized trail. Currently this trail is open to motorized use with no seasonal restrictions. Route 771-A3 above its junction with trail 485 at the Copper Camp mine would also become a non-motorized trail under all action alternatives. Motorized use would still be allowed to the Copper Camp mine area from 7/1 through 8/31 but restricting motorized use beyond this point would preclude motorized access to the ridgeline. The ridgeline represents the wilderness boundary and provides a travel route for goats between the Stonewall and Red Mountain subpopulations.

Restricting motorized use of trail #485 across the head of Copper creek under each of the action alternatives would benefit goats by minimizing displacement from key summer foraging habitat. The head of Copper creek is a series of steep avalanche chutes that provide important summer forage for mountain goats as well as grizzly bears. Due to the lush vegetation in these chutes during the summer months these habitats are particularly important for nursing nannies. However, this area lacks the steep rugged cliffs that goats prefer to remain close to for quick escape from perceived threats when foraging. Therefore, motorized disturbance may serve to disrupt foraging activity in the area for longer time periods than in habitats where secure escape cover is nearby.

The effects of restricting motorized use on route #771-A3 would be similar to those discussed for trail #485 although the area supports lower foraging values for goats and is closer to escape cover. The section of ridgeline accessed by this route is narrow however which can serve to disrupt movements by goats as well as grizzly bears. There is currently no evidence to support that the current level of summer motorized access this route provides from 7/12 through 8/31 has been detrimental to either goats or grizzly bears. However, it is reasonable to expect that future

OHV use will continue to increase and correspondingly, increase the potential to negatively impact use by goats. The head of the Copper creek drainage and the Red Mountain area are also recognized as important grizzly bear habitat and the potential for OHV use to impact grizzly bears is similar to that described for mountain goats.

Cumulative Effects Common to the Mountain Goat for All Alternatives

The potential of this project to cumulatively impact mountain goats is minimal due to limited access into mountain goat habitat and minimal overlap between the range of the mountain goat population with other activities in time and space. Spatially, other than winter recreational use there are no other future activities planned in the preferred habitats of mountain goats within the planning area. Similarly, there are no planned management activities that overlap temporally with the summer recreation period in mountain goat habitats Although winter and non-winter travel spatially overlap mountain goat range there is very little temporal overlap. The recent winter travel decision imposing a 3/31 season ending date for lands north of Highway 200 outside the Copper bowls served to benefit goats by increasing the lag time between the end of winter snowmobile use and the beginning of non-winter wheeled use. Proposed changes under non-winter travel would benefit mountain goats not only by minimizing or preventing disturbance in key habitats during the spring and fall seasons but would also reduce potential disturbance and displacement effects during the summer and winter months. The existing condition has the greatest potential to cumulatively impact mountain goats due to the lack of any season restrictions on motorized use.

Summary and Determination of Effects, for All Alternatives

In summary, all action alternatives would reduce the potential for summer motorized use to negatively impact mountain goats or their habitat. Among the action alternatives, alternative 2 is most similar to the existing condition and would do the least to reduce potential impacts to mountain goats while alternative 3 would do the most to minimize impacts to the mountain goat population due to the 9/1-6/30 seasonal restriction on Trail #417. All of the action alternatives would convert trails #771-A3 and 485 to non-motorized which would benefit goat movements between suitable habitats and foraging activities. The potential for Trail U-330-B1 to impact goats is primarily limited to the upper extent of the trail along the ridge which is consistently used by goats. Although closed under the existing condition unauthorized motorcycle use occasionally occurs. Under alternative 2 the trail would remain closed. Alternatives 3 and 4 however, would decommission the trail which would help minimize unauthorized use. Alternative 4 would also close the Cotter Mine Road 330-B1 which accesses the lower end of Trail U-330-B1.

Conversely, the seasonal closure of 9/1 to 6/30 for trail #417 is anticipated to have the greatest benefit to the mountain goat population as discussed previously. While alternative 1 and alternative 2 would have the greatest potential to impact goats due to no season ending date.

Alternative 4 would reduce the risk of illegal harvest by restricting access prior to the big game hunting season but would extend the potential for disturbance or displacement to goats compare to alternative 3. Alternative 4 would also result in trail reroutes that would extend the trail further out onto the ridge further increasing the potential to displace goats from suitable foraging habitat.

Determination of Effects Summary

Table 95 provides a summary of the effects determinations of the proposed Blackfoot Travel Plan upon relevant terrestrial species as addressed in the Wildlife Specialist Report/Biological Evaluation (2012). The BA will be completed analyzing the effects of the proposed action and will be provided to the USFWS. The Wildlife Specialist Report/Biological Evaluation also incorporated the effects analysis and determinations from the Biological Assessment (BA) for threatened, endangered, proposed species, and designated critical habitat.

Table 95. Species determination of effects

Species	Scientific Name	Status	Determination[1]			
			Alternative 1	Alternative 2	Alternative 3	Alternative 4
Mammals						
Grizzly bear	*Ursus arctos*	Threatened	NLAA	MLAA	MLAA	MLAA
Canada lynx	*Lynx canadensis*	Threatened	NLAA	NLAA	NLAA	NLAA
Lynx critical habitat		Threatened	NLAA	NLAA	NLAA	NLAA
Wolverine	*Gulo gulo*	Proposed	No Jeopardy	No Jeopardy	No Jeopardy	No Jeopardy
Gray wolf	*Canis lupus*	Sensitive	MIIH	MIIH	MIIH	MIIH
Fisher	*Martes pennanti*	Sensitive	NI	MIIH	MIIH	MIIH
Marten	*Martes americana*	MIS	No effect upon mature conifer habitat or population viability.	No effect upon mature conifer habitat or population viability.	No effect upon mature conifer habitat or population viability.	No effect upon mature conifer habitat or population viability.
Elk	*Cervus elaphus*	MIS	Temporary disturbance and displacement, but no significant effect upon habitat or population viability.	Temporary disturbance and displacement, but no significant effect upon habitat or population viability.	Temporary disturbance and displacement, but no significant effect upon habitat or population viability.	Temporary disturbance and displacement, but no significant effect upon habitat or population viability.
Mule deer	*Odocoileus hemionus*	MIS	Temporary disturbance and displacement, but no significant effect upon habitat or population viability.	Temporary disturbance and displacement, but no significant effect upon habitat or population viability.	Temporary disturbance and displacement, but no significant effect upon habitat or population viability.	Temporary disturbance and displacement, but no significant effect upon habitat or population viability..
Mountain goat	*Oreamnos americanus*	SOC	No significant effect upon population or habitat	No significant effect upon population or habitat	No significant effect upon population or habitat	No significant effect upon population or habitat
Birds						
Flammulated owl	*Otus flammeolus*	Sensitive	MIIH	MIIH	MIIH	MIIH
Black-backed woodpecker	*Plecotus arcticus*	Sensitive	NI	NI	NI	NI

Species	Scientific Name	Status	Determination[1]			
			Alternative 1	**Alternative 2**	**Alternative 3**	**Alternative 4**
Northern goshawk	*Accipiter gentilis*	MIS	No significant effect upon old growth habitat, potential nesting, foraging habitat or population viability.	No significant effect upon old growth habitat, potential nesting, foraging habitat or population viability.	No significant effect upon old growth habitat, potential nesting, foraging habitat or population viability.	No significant effect upon old growth habitat, potential nesting, foraging habitat or population viability.
Pileated woodpecker	*Dryocpus pileatus*	MIS	No significant effect upon old growth habitat, snag habitat or population viability.	No significant effect upon old growth habitat, snag habitat or population viability.	No significant effect upon old growth habitat, snag habitat or population viability.	No significant effect upon old growth habitat, snag habitat or population viability.
Hairy woodpecker	*Picoides villosus*	MIS	No significant effect upon snag habitat or population viability.	No significant effect upon snag habitat or population viability.	No significant effect upon snag habitat or population viability.	No significant effect upon snag habitat or population viability.
Amphibians						
Western toad	*Bufo boreas*	Sensitive	MIIH	MIIH	MIIH	MIIH

NLAA = May Affect, Not Likely to Adversely Affect; **LAA** = May Affect, Likely to Adversely Affect

NI = No Impact; **MIIH** = May Impact Individuals or Habitat

[1] These determinations are based on the predicted direct, indirect and cumulative effects from implementation of all aspects of alternatives 1, 2, 3 and 4, including the proposed programmatic Forest Plan Big Game Security Amendment and programmatic Forest Plan Amendment for Management Areas R1 and N1, and all aspects of proposed road and trail changes, as described in detail in chapter 2.

Migratory Birds

Direct and Indirect Effects - Alternative 1

Alternative 1 would maintain habitat over the short-term.

Direct and Indirect Effects - Alternatives 2, 3 and 4

All action alternatives would minimize disturbance by road closures and decommissions, outweighing the negative effects of new trail/road construction. As a result, habitat for migratory birds would be maintained or improved. Snag reduction is expected to occur along new open/constructed roads by firewood cutters.

Summary and Determination of Effects for All Alternatives

Local populations of all migratory bird species that currently utilize the project area are expected to be maintained. All alternatives are in compliance with the Migratory Bird Treaty Act.

Noxious Weeds

Affected Environment

Analysis Area

Areas within 300 feet of roads or trails within the Blackfoot travel planning area were used as the analysis area for direct and indirect effects. The 2001 Tri-State OHV Decision provided for motorized vehicle travel within 300 feet of a road or trail for the purpose of dispersed camping, recognizing that forest users want some allowance to get away from the dust and noise generated on open routes. Motorized vehicle use is permitted within 300 feet of the edge of motorized roads and trails under all alternatives for this project, for the purposes of dispersed camping and parking associated with camping. A 300-foot buffer on all road and trail types was used for noxious weed analysis for consistency.

The Blackfoot travel planning area is used to analyze cumulative effects on populations as the planning area encompasses the entire area where disturbance from proposed activities would occur.

Existing Condition

Over time, numerous activities such as road building, recreation, grazing, and timber harvest, all of which are vectors for the spread of weeds, have occurred in the planning area, resulting in noxious weeds covering approximately 8,942 acres within 300 feet of mapped roads and trails. Since 2001 motorized vehicle use has been permitted for dispersed camping up to 300 feet off designated motorized routes. Most dispersed camping and parking sites have established routes to them. Although there are currently no resource protection measures in place for these roadside areas, the Forest has found existing conditions to be within acceptable environmental limits.

In general, the weeds in this area tend to be shade intolerant and are less likely to invade where the forest canopy is intact. Dry vegetation types and areas affected by road development, grazing, logging, fire, or other disturbances are most susceptible to noxious weed invasion. Typically, noxious weed species have the ability to spread rapidly and reproduce in high numbers, which enables them to effectively crowd out native plant populations. Some can pose serious threats to the composition, structure, and function of native plant communities.

A large spotted knapweed occurrence is mapped along the portion of the Continental Divide National Scenic Trail (CDNST) that follows Road1884 and two Canada thistle occurrences are near the trail to the north. . Lands south of the Continental Divide Trail (Bartlett Creek Area) were recently acquired. Although weeds have not been mapped, these areas are heavily infested with spotted knapweed. An occurrence of spotted knapweed is mapped on the Stonewall Trail, and spotted knapweed and black henbane occur along roads at the west end of the Helmville-Gould Trail.

The Helena National Forest uses the State of Montana and county weed lists to identify and prioritize weed management on the Forest. Nine State of Montana noxious weed species occur in the planning area: spotted knapweed, Canada thistle, leafy spurge, oxeye daisy, Dalmatian toadflax, butter and eggs, houndstongue, common tansy, and St. Johnswort. These species have a 2B priority, meaning that they are widespread and abundant in Montana; management criteria require that they are eradicated or contained where less abundant. Three species (black henbane, common mullein and musk thistle) are not on the Montana State Weed List, but are on the lists of several counties in the planning area. Cheatgrass (*Bromus tectorum*), although not listed as a noxious weed in the State of Montana, is considered a “regulated plant” by the State; it is not mapped in the planning area but does occur and is a species of concern on the Helena National Forest. The Noxious Weed Report (Carsey 2013) in the project record provides more detailed descriptions of each of these species. The following table shows the acres infested with noxious weeds within the 300 feet of all travel routes in the planning area.

Table 96. Mapped noxious weed infestations within 300 feet of roads and trails

Primary Noxious Weed Species	Infested Acres	Status
Black henbane (*Hyoscymus niger*)	368.5	County lists
Butter and eggs (*Linaria vulgare*)	1,476.0	2B
Canada thistle (*Cirsium arvense*)	1,838.0	2B
Common mullein (*Verbascum Thapsus*)	1,686.0	County lists
Common tansy (*Tanacetum vulgare*)	0.3	2B
Dalmatian toadflax *(Linaria dalmatica)*	993.5	2B
Houndstongue/Gypsyflower (*Cynoglossum officinale*)	1,927.0	2B
Leafy spurge (*Euphorbia esula*)	121.0	2B
Musk thistle (*Carduus nutans*)	2,574.0	County lists
Oxeye daisy (*Leucanthemum vulgare*)	425.0	2B
St. Johnswort (*Hypericum perforatum*)	9.0	2B
Spotted knapweed (*Centaurea maculosa*)	8,144.0	2B

[1]The “infested acres” is a measure of the actual amount of ground covered by weeds. It does not include the overlap that often occurs when several weed species occupy a site.

Environmental Consequences

Methodology

The methodology used in this analysis includes the best available data from the Helena National Forest Weeds database, Geographic Information System datasets and personal ground reconnaissance of the planning area. A geodatabase (BlkftNonwinTMP.gdb) contains numerous geospatial layers that provide the data that were used in this analysis. The geodatabase was developed from field survey data taken by forest personnel. Data layers were updated for the Final Environmental Impact Statement for the Weeds Treatment Project (USDA Forest Service 2006b) and are available in the project file. Weed layers are updated periodically but always present a picture of a certain point in time. Since weed infestations regularly expand or are reduced or eliminated through treatment, the mapped layers typically are not completely current. Geodatabase layers include the known locations of weed infestations, watershed and stream information, past activities, and road and trail information as well as other layers that were used for this analysis. Personal experience, including site reconnaissance surveys of three planning areas within the Blackfoot travel planning area (Dalton, Stonewall, and Helmville Face) on September 21-23, 2010, October 17-21, 2011, and June 11-15, 2012, GIS analysis and survey information in the Forest files were used to analyze potential effects to noxious weeds in the planning area. ArcMap was used to combine various datasets and to understand relationships and the effects of travel routes on weeds. See the Reference section for a list of more materials used for this analysis.

Indicators and measures used to disclose environmental effects of the alternatives are:

1. Presence of noxious weeds near roads and trails measured by the number of acres within 300 feet of motorized and non-motorized trails
2. Relative amount of disturbance measured by the miles of motorized and non-motorized routes, and proposed new construction
3. Management direction for “trails of interest”, measured qualitatively
4. Resource protection measures

Assumptions

The following assumptions were used for this analysis:

- The analyses and decisions made in the Record of Decision for the Helena National Forest Weed Treatment Project (USDA Forest Service 2006b, 2007) are incorporated in noxious weed analysis and management on the Helena National Forest.
- Any soil disturbing activity with mechanized equipment has the potential to increase noxious weed invasion or spread.
- The rate of spread of noxious weeds on the Lincoln Ranger District is mitigated by an aggressive weed treatment program. The District has begun efforts to measure weed infestations, treatments and changes in infestation levels on the District over time. The expected rate of weed spread on the Helena National Forest is approximately 11 percent (USDA Forest Service 2012a). On the Lincoln Ranger District the rate of spread may be less because of the aggressive weed treatment program.
- The current Forest noxious weed treatment program would continue to treat approximately one third of the weeds within the planning area annually.
- Any roads proposed for storage would be at a 3S level (table 4).
- Any roads proposed for decommissioning would be at a 4 level (table 4).
- All mitigation measures/project design features would be implemented (chapter 2).

- All changes proposed for each alternative would be fully implemented.
- Wheeled motorized vehicle use within 300 feet of designated motorized routes would be allowed, as described in more detail in chapter 2. Relatively few new sites would be used within the 300-foot area, as most good camping and parking areas already have an established route to them.
- The resulting motorized and non-motorized route system would be managed as described in this FEIS and motorized use would occur where it is proposed. The effects analysis describes the effects resulting from the change between where people are driving (alternative 1) and where people would drive (alternatives 2, 3 and 4).
- Motorized use results in more ground disturbance than non-motorized use and therefore, greater potential risk of new weed introductions and weed spread. See discussion in the Effects Common to All Alternative section.

Spatial and Temporal Context for Effects Analysis

The geographic scope of analysis for direct and indirect effects is within 300 feet of roads and trails. This is the area where motorized vehicle use is allowed off motorized roads and trails under all alternatives and where dispersed use is most likely to occur. For consistency, 300 feet is used for all road types even though vehicle use may not be permitted on all routes. For cumulative effects the spatial boundary is the Blackfoot travel planning area. This is an appropriate spatial area for determining effects to plant species because it encompasses the entire area where disturbances related to the project could occur.

The temporal bounds include the past, present and the foreseeable actions described in the Cumulative Effects section of this report. Past actions are considered as part of the existing condition. Adverse short-term effects (up to 5 years) from soil disturbance would be apparent until the native ground vegetation regenerates. For this planning effort, we assume there would be few new dispersed camping disturbances since the area has a legacy of dispersed use and most camping and parking areas are already established. This analysis will focus on effects during the 10 years following project implementation as that is the time during which effects may reasonably be attributed to proposed activities.

Past, Present, and Foreseeable Activities Relevant to Cumulative Effects Analysis

The list of past, present and reasonably foreseeable future actions listed in appendix D of this FEIS was used for this analysis.

Effects Common to All Alternatives

Noxious weed infestations adversely affect native fauna and flora and present a large-scale threat to native ecosystems (D'Antonio et al. 2004, Lodge and Shrader-Frechette 2003, Lonsdale 1999, Mack et al. 2001, Pauchard et al. 2003). Noxious weeds can create monocultures if uncontrolled. At high infestation levels (canopy cover greater than or equal to 25 percent), noxious weeds cause a loss of native plant diversity, reduction of wildlife habitat and forage, increase in erosion, and depletion of soil moisture and nutrient levels. These effects would continue regardless of which travel management alternative is selected for implementation for this project and would vary depending on the level of infestation and the provisions of the alternative (Lonsdale 1999, Trombulak and Frissell 2000). Monitoring on the Helena National Forest has found that weeds spread approximately 11 percent (USDA Forest Service 2012a) annually. On the Lincoln Ranger District, where weeds are treated aggressively, the rate of spread is estimated at less than 11 percent per year.

Spotted knapweed, cheatgrass, houndstongue, musk thistle, common mullein, St. Johnswort, black henbane, common tansy, oxeye daisy, and Canada thistle may spread rapidly with ground disturbance and will spread at a slower rate without disturbance (Duncan et al. 2003; Young et al. 1987, Zouhar 2001a, 2001b, 2003b). Dalmatian toadflax, butter and eggs, and leafy spurge spread readily without ground disturbance and spread very rapidly with disturbance (Zouhar 2003b, 2003c, Gucker 2010). Common tansy is a species of particular concern because it covers a very small portion of the planning area and could likely be eradicated in the planning area if treated as a priority. Mapped occurrences of tansy do not occur within 300 feet of routes, however, so the species would not likely be affected by any alternative.

Effects to Native Plant Diversity and Ecosystem Processes

Forest road and trail systems may affect native plant diversity and ecosystem processes. One of the main effects of road systems is to increase the abundance and distribution of noxious weeds. Greater density of routes, especially motorized routes, increases the possibility of recreationists reaching the more remote areas of the Forest, and increases the amount of dust, habitat fragmentation, soil compaction, and erosion, all of which may affect native plant communities.

Studies of impacts to natural fire processes strongly support the expectation that invader impacts on disturbance regimes (ecosystem process) can strongly and possibly irreversibly affect community structure (Levine et al. 2003). Dramatic alterations of fire frequency in historic shrublands that are now dominated by cheatgrass have been demonstrated (Ehrenfeld et al. 2001). Other cases of exotic grass and shrub impacts include increasing fuel resulting in greater flame lengths, higher temperatures and greater heat release. In each case the mechanism through which impact develops depends on whether the invader can outcompete the natives for resources. The effects of cheatgrass strongly support the prediction that invaders affecting disturbance processes have the greatest potential to create large impacts on ecosystems (Vitousek 1990).

Allelopathy is a biological phenomenon by which one organism produces biochemicals that influence the growth, survival and reproduction of other plants. Ridenour and Calloway (2001) showed that spotted knapweed reduced the root growth of Idaho fescue by 50 percent, showing an adverse allelopathic effect.

Recreational Use

Comparing the effects of different types of use on ground disturbance and the potential for introduction and spread of noxious weeds is complex and must involve consideration of numerous factors. Where use is light or where management programs provide adequate protection, impacts may not be unacceptably severe. However, where use is heavy and protective actions are inadequate, impacts may be severe and widespread (Cole 1994). Location and design of roads and trails may add to or reduce the potential for impacts from recreational use. The types of recreational activities and modes of travel continue to diversify resulting in a wider range of effects on ecological conditions. Impacts associated with motorized travel differ greatly from those associated with equestrian, foot traffic, and mountain bike use (Cole and Spildie1998, Payne et al. 1983, Torn and others 2009). Motorized uses are generally considered to have greater potential to adversely affect the landscape and contribute to the introduction and spread of noxious weed species than non-motorized uses, primarily due to (1) the ability of vehicles to travel great distances, allowing visitors to access more terrain in a shorter time, including remote locations, and (2) the higher ground pressures and greater torque applied to soil and vegetation surfaces (Olive and Marion 2009). Non-motorized uses, however, may also cause serious damage to soil and native vegetation, but effects generally tend to be more localized (Cole 1989, Potito and Beatty 2005, White et al. 2006). Among non-motorized uses, horse use has been shown to have significantly greater effects (for trampling and erosion indicators) than hiking, llama use, and mountain biking (Cole and Spildie 1998, Olive and Marion 2009). White and others (2006) found that certain impacts to mountain bike trails, especially width, are comparable or less than hiking or multiple-use trails, and significantly less than impacts to equestrian or off-highway vehicle trails.

For the purposes of analysis, we assume that motorized uses usually create more ground disturbance than non-motorized uses and therefore, motorized uses are more likely to promote weed establishment and spread.

Public access for recreation, firewood collection, and private property access would continue along roadsides. The ground disturbance associated with these activities would likely increase weed infestations where bare soil is exposed. The area immediately adjacent to roads and trails would continue to be the most vulnerable to weed infestation due to several factors: weed seed from vehicles would be likely to detach along the road or trails; these areas are disturbed when bladed with heavy machinery; weed seed can be on the machinery or in the soil that is spread along the maintained area. Roads and trails have high exposure to weeds due to regular delivery of weed seed from vehicles, humans and animals. The more frequently used roads and trails have a higher exposure to weed species.

Effects Common to Alternatives 2, 3 and 4

Many of the changes proposed to the travel system under alternatives 2, 3 and 4, such as: road decommissioning and storage actions that involve the use of mechanical equipment and ground disturbance, level of motorized use in the planning area, management changes to “trails of interest”, amount of new construction, and protection measures for vehicle use within 300 feet of motorized routes, would affect the presence or spread of weeds.

Alternatives 2, 3, and 4 propose to reduce the number of miles of designated motorized routes, increase the number of miles of non-motorized routes, store or decommission existing routes, change the management direction for certain trails, add resource protection measures for areas designated for off-road vehicle use, and add amendments to the Forest Plan.

Alternatives 2, 3, and 4 would have fewer miles of motorized routes and more miles of stored and decommissioned routes than alternative 1. While non-motorized use may have serious effects, generally effects are less intense and widespread than effects of motorized use. Due to the more limited number of miles of motorized use available under the action alternatives (chapter 2), those alternatives would be expected to have generally fewer adverse effects than the current condition (alternative 1).

Programmatic Forest Plan Amendments for Management Area N1 and R1 and for Big Game Security

This proposed big game security amendment would not change the status of any roads or trails but would provide a different method of evaluation of elk security in the planning area. The amendment would not have any direct effect on existing noxious weed populations and would not have effects on the increase or decrease in the spread of noxious weeds in the planning area.

The programmatic Forest Plan Amendment for Management Areas N1 and R1would allow a motorized section of trail #440 (the CDNST) in T 13N, R7W, Sections 15, 16, 21, and 22 in

Management Area N1. Even though this portion of trail #440, part of the CDNST and contiguous with Road 1884, was in existence in this location and open for motorized use when the Forest Plan was signed, the plan did not acknowledge this fact and an amendment is needed now as part of this proposed action.

Since this trail has been used by motorized vehicles in the past, there would be no change under alternatives 2 and 3 and no effects that would not also occur under alternative 1 (except for the resource protection measures that would be instituted for use 300 feet from the edge of the trail discussed above). Under alternative 4, trail #440 would be reconstructed to the east of Road 1884 and would be non-motorized.

The Helmville Gould trail does not pass within 300 feet of mapped infestations of noxious weeds. Since this trail has been used by motorized vehicles in the past, there would be no change under alternatives 2, 3 or 4 and no effects that would not also occur under alternative 1 (except for the resource protection measures that would be instituted for use within 300 feet from the edge of the trail discussed above).

Other management changes would be made to the way these trails are used. Those changes may affect noxious weeds and are discussed under each alternative.

Road Storage and Decommissioning

Road storage and decommissioning could include construction of waterbars, outsloping, or selectively re-contouring, removal of culverts, restoration of watercourses, ripping 12-18 inches, seeding, fertilizing, treating noxious weeds, and scattering slash on slopes. These actions would involve localized ground disturbance, erosion and sedimentation in the short term (5 years). However, project design features (chapter 2) would be implemented for any new ground disturbing activities associated with storage and decommissioning. Implementing these features would ensure that short-term adverse impacts to the spread of noxious weeds would be negligible to minor. Over the long term, storing and decommissioning roads would substantially reduce the areas open to motor vehicle use and these former roads, thereby reducing the risk of weed introduction and spread.

New Route Construction or Reconstruction of Existing Routes

New ground disturbance would occur for new road or trail construction or reconstruction. New motorized and non-motorized trail construction is likely to result in a localized expansion of weeds into areas currently uninfested. New infestations would likely remain along the roadside unless there is disturbance away from the new trail segment (e. g., dispersed camping).

Project design features require assessment of the risk of weed spread when construction is planned, restoration after construction if needed to prevent weed establishment, and weed treatment before and after construction. Implementation of these measures would effectively reduce the chances of noxious weed establishment and spread. Continuing weed treatment through the Forest weed treatment program would reduce weeds that do establish.

Weed Treatment

Weed treatment is not a part of this project except as it relates to new road or trail construction or construction-related to storage and decommissioning. Project design features require inventory and treatment of weeds prior to new construction and monitoring and treatment in the first and third year after construction (chapter 2). Weed treatment could involve manual removal but most likely would involve herbicide use. Weed treatment before and after new construction would greatly reduce the risk of noxious weed spread into areas around new construction.

The HNF Weed Treatment Project FEIS and Record of Decision (USDA Forest Service 2006b, 2007) provides guidance and environmental requirements for weed control and treatment activities, which would be applied under any alternative.

Alternative 1 – No Action

Direct and Indirect Effects

Alternative 1 does not propose any changes to the existing condition. No new construction would take place and no additional closures or road decommissioning would take place. No additional ground disturbance would occur specifically as a result of implementing this alternative. Weeds would continue to spread at a rate of approximately 11 percent per year or less (HNF 2012).

Under this alternative there are approximately 8,942 acres of noxious weeds associated with all routes in the planning area. A spreadsheet showing the weeds on a given route can be found in the project file.

Resource Indicator 1: Presence of noxious weeds near roads and trails measured by the number of acres within 300 feet of routes

Under this alternative there are approximately 6,008 acres of noxious weeds within 300 feet of motorized routes and 87 acres of noxious weeds within 300 feet of non-motorized routes. There are no mapped noxious weeds within 300 feet of stored or decommissioned roads, but there are 2,846 acres within 300 feet of closed roads.

Resource Indicator 2: Level of motorized use, measured by miles of route by route type

The existing condition includes more miles of motorized routes and fewer miles of non-motorized use than the other alternatives. Under alternative 1, the motorized system includes approximately 446 miles of roads, 56 miles of motorized trail, 92 miles of road acquired through land exchange (13 of which are currently open) and 60 miles of unclassified routes (20 miles of which are currently open). There would be 71 miles of non-motorized trails with no designated mountain bike trail system. There would be no new construction or reconstruction (chapter 2).

This alternative would have a greater risk of weed spread than the action alternatives because of the greater mileage of motorized routes.

Resource Indicator 3: Management of “trails of interest”, measured qualitatively

Under alternative 1, these trails of interest in the planning area would be managed as they are currently; no changes are proposed. With more motorized use on these trails compared to alternatives 3 and 4, alternative 1 would be expected to have greater potential for disturbance and greater risk of noxious weed spread on these trails than alternatives 3 and 4.

Resource Indicator 4: Resource protection measures

Under alternative 1, wheeled motorized vehicle use would continue to be allowed within 300 feet of motorized routes for the purposes of dispersed camping, as described in chapter 2. Alternative 1 would not include the additional resource protection measures that are included in the action alternatives. As a result, all off-road impacts from motorized use may not be minimized under this alternative. In the planning area since 2001, however, the Forest has determined that the effects of this use have been within acceptable environmental limits. Where site-specific issues have arisen, the Forest has been able to address them via site-specific area closures or restrictions (chapter 2).

Cumulative Effects

The existing condition reflects the effect of past disturbances as well as the effect of noxious weed control efforts. Please refer to the Blackfoot Travel Plan cumulative effects table in appendix D for a specific description of past, present and foreseeable activities.

Implementing alternative 1 in combination with the effects of past, present and reasonably foreseeable future actions would result in the continuation of effects currently taking place. Noxious weeds would continue to spread at current rates. All projects on National Forest System lands are subject to direction to minimize the spread of noxious weeds, and weed infestations on the HNF are treated as part of an integrated weed program. Any disturbance, however, may create conditions conducive to the spread of weeds, so weeds may be expected to continue to expand under all alternatives.

Current and reasonably foreseeable activities within the planning area include firewood collection, hunting, recreational use of roads and trails, road maintenance, power line maintenance, grazing, fuels reduction projects, wildlife improvement projects, hazard tree removal, management actions on private lands within the planning area, and fire suppression. The vehicles, personnel, and equipment associated with these activities, moving into and around the area, would be common vectors for the transport of weed seeds or propagules. These activities could result in colonization by weed species not currently known in the area and expansion of existing infestations.

Projects that create ground disturbance and have vehicle use would likely cause noxious weed expansion and possibly the introduction of new invasive species in the cumulative effects area. Most projects, however, have mitigations that would reduce or prevent effects. For example,

- Private land operations are governed by Montana State law to control noxious weed populations.
- Pre- and post-treatment of weeds is required for the hazard tree removal project.
- All mining plans of operations require weed treatment.

Since 2007 all projects have been subject to the Helena National Forest Noxious Weed Treatment Record of Decision (USDA Forest Service 2007) requiring all projects to take measures to reduce or prevent the introduction and spread of noxious weeds. The decision requires the Forest to maintain an integrated weed treatment program. The goal of the weed treatment program is to treat approximately one-third of weed infestations annually. Effects of the provisions of the Helena National Forest Noxious Weed Treatment Record of Decision (ibid.) and the weed treatment program are beneficial as they reduce the number and size of infestations, and reduce the potential for cumulative effects across the Forest. Implementation of the Record of Decision and the weed treatment program would keep cumulative effects to a minimum. Over time, with treatment of one-third of the weed infestations each year, infestations would be reduced faster than they spread (at an estimated rate of 11 percent per year).

Summary of Effects

Alternative 1 does not propose any changes, and there would be no new effects from proposed actions under this alternative. There may, however, be consequences of not implementing an action alternative. For instance, alternative 1 has more miles of motorized routes and fewer miles of non-motorized routes than the action alternatives. Disturbance associated with the existing travel system would continue. Based on the number of miles and number of acres of existing weeds within 300 feet of roads and trails, alternative 1 would be expected to have a greater risk of weed spread within the planning area. Alternative 1 does not include specific protection measures to prevent resource damage from motorized use within 300 feet of designated motorized routes, so disturbance from motor vehicle use may be greater in these areas, and as a result, weed spread may also be greater. Although disturbance within 300 feet of motorized routes would be expected to be greater under alternative 1, the Forest has found the existing conditions to be within acceptable limits. With more motorized use on the three "trails of interest" compared to alternatives 3 and 4, alternative 1 would be expected to have greater potential for disturbance and greater risk of noxious weed spread on these trails than alternatives 3 and 4.

Alternative 2

Project Design Features

Project design features specific to noxious weeds are listed in chapter 2 starting on page 43. These design features apply to alternatives 2, 3 and 4.

Direct and Indirect Effects

Alternative 2 provisions that would be different from the existing condition (alternative 1) and that may affect noxious weeds include: (1) implementation of resource protection provisions for vehicle use within 300 feet of motorized roads and trails, (2) differences in the number of acres of noxious weeds near roads and trails, and (3) the potential for spread of noxious weeds near route construction.

Resource Indicator 1: Presence of noxious weeds near roads and trails measured by the number of acres within 300 feet of routes

Under alternative 2 there would be 3,737 acres of noxious weeds within 300 feet of motorized routes, 115 acres within 300 feet of non-motorized routes, 3,364 acres within 300 feet of stored or decommissioned routes, and 1.5 acres within 300 feet of new motorized construction.

Since motorized routes are more likely to contribute to weed spread, the reduction of miles of motorized routes (compared to alternative 1) would likely result in reduced potential for weed spread. Although there would be more acres of weeds along non-motorized routes, these routes are less likely to contribute to the spread of weeds since users (at least hikers and bikers) are less likely to carry weed seeds and other reproductive parts great distances, are less likely to create as much ground disturbance, and would not be using vehicles for dispersed camping. Livestock could be a source of weed spread; however, there is generally less livestock use on non-motorized trails than vehicle use on motorized routes.

New ground disturbance is also likely to occur within 300 feet of motorized routes where vehicle use is permitted. Resource protection measures for this use under alternative 2 would reduce impacts and allow for management changes if needed (Resource Indicator 4).

Resource Indicator 2: Level of motorized use, measured by miles of route by route type

Under alternative 2, there would be approximately 352 miles of motorized roads, 92 miles of motorized trails, and 120 miles of non-motorized trails. Approximately 135 miles would be stored and 8 miles would be decommissioned. Approximately 0.2 miles of new road and 2 miles of new motorized trail would be constructed. Approximately 31.5 miles of new non-motorized trail would be constructed, 31 of which would be new mountain bike trail construction (see appendix G for a map of proposed motorized, non-motorized and mountain bike routes and appendix C for tabular summaries).

With fewer miles of motorized routes and more miles of non-motorized, stored and decommissioned routes, alternative 2 would be expected to reduce the risk of noxious weed establishment and spread compared to alternative 1. There would be short-term adverse effects from the new construction proposed as well as from storage and decommissioning actions. In the long-term, native plants should revegetate disturbed areas along newly constructed trails and stored and decommissioned sites. Implementation of project design features would reduce the establishment of new weed infestations to minor levels through requirements for assessment of the risk of weed spread during construction planning, revegetation or covering the soil after construction, if needed to prevent weed establishment, and treatment of weeds before and after construction if needed. Continuing weed treatment by the Forest weed treatment program would reduce weeds that do establish

Resource Indicator 3: Management of “trails of interest”, measured qualitatively

Under alternative 2, trails of interest in the planning area would be managed as they are currently; no changes are proposed. The CDNST would continue to be a mix of motorized and non-motorized sections; there would be no increase in motorized use along the CDNST. The Helmville Gould and Stonewall Trails would continue to be managed as motorized trails (open to vehicles 50 inches or less in width with no seasonal restrictions).

Since there would be no management changes under alternative 2, effects of this alternative would be the same as for alternative 1. With more motorized use on these trails, alternative 2 would be expected to have greater potential for disturbance and greater risk of noxious weed spread than alternatives 3 and 4.

Resource Indicator 4: Resource protection measures

All provisions discussed under the Regulatory Framework section in the Noxious Weed Report (Carsey 2013) would apply. Project design features would apply.

Under alternative 2, wheeled motorized vehicle use for dispersed camping and parking associated with dispersed camping would be allowed up to 300 feet from the edge of designated motorized system routes, as long as:

- No new permanent routes are created by this activity
- No damage to existing vegetation, soil, or water resources occurs
- Travel off-route does not cross streams
- Travel off-route does not traverse riparian or wet areas
- Recreationalists will use the most direct route to disperse camp
- Recreationalists must select their site by non-motorized means

Parking safely next to the side of the road would also be allowed. The proposed monitoring would increase the chances of discovering any threats or disturbance and would allow for site-specific management changes if needed.

Cumulative Effects

Spatial Context for Effects Analysis

For cumulative effects the spatial boundary is the Blackfoot travel planning area. This is an appropriate spatial area for determining effects to plant species because it encompasses the entire area where disturbances related to the project would occur.

Temporal Bounds

The temporal bounds include the past, present and the foreseeable actions described in the Cumulative Effects section. Past actions are considered as part of the existing condition. Negative short-term effects (up to 5 years) from soil disturbance would be apparent until the native ground vegetation regenerates. This analysis will focus on effects during the 10 years following project implementation as that is the time during which effects may reasonably be attributed to proposed actions.

Cumulative effects under alternative 2 would be similar to those identified under alternative 1. There would be fewer infested acres along motorized routes and fewer motorized routes associated with alternative 2, so some effects would be expected to decrease with this alternative as compared to alternative 1.

Implementing alternative 2 in combination with the effects of past, present and reasonably foreseeable future actions would continue to allow activities that promote the introduction and spread of noxious weeds contributing to cumulative effects on the Forest. However, implementing alternative 2 would result in a reduction of noxious weed infestation in some areas, or a slower increase over time compared to the existing condition (alternative 1) because it would reduce the number of miles of open motorized routes through storage, decommissioning, or conversion to trails.

Summary of Effects

Implementing alternative 2 would reduce the mileage of open motorized routes as compared to alternative1, but motorized mileage would be more than under alternatives 3 and 4. Alternative 2 would have more miles of non-motorized routes than alternative 1 but less than alternatives 3 and 4. Alternative 2 would have the highest mileage of stored routes. This alternative would involve 2.2 miles of motorized road or trail construction or re-construction and 31.5 miles of new non-motorized trail construction. “Trails of interest” under alternative 2 would be managed as they are now, mostly for motorized use. Alternative 2 includes protection measures to reduce resource damage in the 300 foot motorized vehicle use areas of designated motorized routes.

Alternative 3

Direct and Indirect Effects

Alternative 3 provisions that would be different from the existing condition (alternative 1) and that may affect noxious weeds include: (1) implementation of resource protection provisions for vehicle use within 300 feet of roads or trails, (2) differences in the number of acres of noxious weeds near roads and trails, (3) differences in the miles of routes, and (4) differences in management direction for "trails of interest".

Resource Indicator 1: Presence of noxious weeds near roads and trails measured by the number of acres within 300 feet of motorized and non-motorized trails

Under alternative 3 there would be approximately 4,733.5 acres of noxious weeds near motorized routes and 167 acres near non-motorized routes, 4,035 acres within 300 feet of stored and decommissioned routes, and 13.4 acres within 300 feet of construction of motorized routes.

Resource Indicator 2: Level of motorized use, measured by miles of route by route type

Alternative 3 has the largest number of miles of non-motorized routes and an intermediate number of miles of motorized routes. Under alternative 3, the motorized trail system would include approximately 302 miles of roads and 47 miles of trails. The designated non-motorized trail system would include approximately 158 miles and would include a mountain bike trail system. Approximately 76 miles would be stored and 200 miles decommissioned.

Approximately 3 miles of new motorized trail would be constructed. Approximately 0.2 miles of road would be constructed and approximately 0.5 miles of road would be reconstructed. Approximately 31.5 miles of new non-motorized trail would be constructed (31 miles of this would be for new mountain bike trail construction).

New construction of motorized routes under alternative 3 would be similar to alternative 2. Non-motorized route construction would be the same as under alternative 2 and slightly more than under alternative 4. There could be short-term adverse effects from the new construction proposed as well as from storage and decommissioning actions. In the long-term, site restoration, noxious weed treatment, and removal of routes from use would reduce the risk of weed establishment or spread in these sites over time.

Resource Indicator 3: Management of "trails of interest", measured qualitatively

Under alternative 3, "trails of interest" in the planning area (CDNST, Helmville-Gould, and Stonewall) would be managed differently than they are currently. The CDNST within the planning area would be managed primarily for non-motorized use; seasonal motorized use (closed 9/1-6/30) would be limited to approximately 1 mile of trail and the rest of the trail would be managed for non-motorized use. Management direction for the Helmville Gould Trail would change as well. The trail would be designated a non-motorized trail (over-snow vehicles allowed) from its intersection with the CDNST to Dalton Mountain. The Stonewall Trail would continue to be designated as a motorized trail (open to vehicles 50 inches or less in width) but it would be closed to wheeled use from September 1 – June 30 (there are currently no seasonal restrictions on this trail).

Modifying use on these popular trails to more non-motorized use would reduce the risk of noxious weed spread.

Resource Indicator 4: Resource protection measures

Under alternative 3, wheeled motorized vehicle use for the purposes of dispersed camping and parking associated with dispersed camping would be allowed within 300 feet from the edge of designated motorized system routes, but there would be the same provisions for resource protection and condition monitoring as alternative 2 (chapter 2). These protection measures provide for earlier detection of resource damage and management changes if needed to protect resources.

Cumulative Effects

Cumulative effects under alternative 3 would be similar to those identified under alternative 1. There would be fewer infested acres along motorized routes and fewer motorized routes associated with alternative 3, so some effects would be expected to be reduced with this alternative as compared to alternative 1

Implementing alternative 3 in combination with the effects of past, present and reasonably foreseeable future actions would continue to allow activities that promote the introduction and spread of noxious weeds and would result in a contribution to cumulative effects on the Forest. However, implementing alternative 3 would result in a reduction of noxious weed infestation in some areas, or a slower increase over time compared to the existing condition (alternative 1) because alternative 3 would reduce the number of miles of open motorized routes through storage, decommissioning, or conversion of motorized routes to trails.

Summary of Effects

Implementing alternative 3 would reduce the mileage of open motorized routes as compared to alternatives 1and 2, and result in very similar mileage of open motorized routes as that proposed in alternative 4. Alternative 3 would have the highest mileage of non-motorized routes. This alternative would involve 3.7 miles of motorized road or trail construction or re-construction and 31.5 miles of new non-motorized trail construction. “Trails of interest” under alternative 3 would mostly provide for non-motorized use. Alternative 3 includes protection measures to reduce resource damage in the 300 foot motorized vehicle use areas of designated motorized routes, as described in chapter 2.

Alternative 4

Direct and Indirect Effects

Alternative 4 provisions that would be different from the existing condition (alternative 1) and that may affect noxious weeds include: (1) resource protection provisions for vehicle use within 300 feet of motorized roads and trails, (2) differences in the number of acres of noxious weeds near roads and trails, (3) differences in the miles of routes, and (4) changes to the management direction for “trails of interest.”

Resource Indicator 1: Presence of noxious weeds near roads and trails measured by the number of acres within 300 feet of routes

Under alternative 4 there would be approximately 4,536.5 acres of noxious weeds within 300 feet of motorized routes, 158 acres within 300 feet of non-motorized routes, and 4,409.5 acres within 300 feet of stored and decommissioned routes.

Alternative 4 would include new motorized trail construction and road reconstruction. There would be approximately 23.5 mapped acres of noxious weeds within 300 feet of construction of motorized routes and 36.5 mapped acres within 300 feet of construction of non-motorized routes. Acreages do not include weed infestations that are known to occur but have not been mapped. For instance, newly acquired lands in the Bartlett Creek area are heavily infested with spotted knapweed, but these infestations have not been mapped. General effects of construction on noxious weeds are discussed in the Effects Common to All Action Alternatives section. Effects would limited by project design features, but could include weed spread as a result of increased use in or near infested areas. Where construction results in creating loop trails or connections between trails, for instance in the Bartlett Creek area, use is more likely to increase.

Resource Indicator 2: Level of motorized use, measured by miles of route by route type

Under alternative 4, approximately 289 miles of motorized roads and 63 miles of motorized trails would be available. Approximately 139 miles of non-motorized trails would be available. Alternative 4 would designate a mountain bike trail system in the planning area. Approximately 82 miles of routes would be stored and 212 would be decommissioned.

Approximately 4 miles of new motorized trail would be constructed and approximately 9 miles of existing motorized trail would be reconstructed. Approximately 0.2 miles of new road would be constructed and approximately 0.5 miles of existing road would be reconstructed. Approximately 21 miles of new non-motorized trail would be constructed (20 miles of this would be for new mountain bike trail construction) and approximately 3 miles of existing non-motorized trail would be reconstructed.

Alternative 4 would have fewer miles of motorized routes than alternatives 1 and 2 and slightly more than alternative 3. Alternative 4 would have more miles of non-motorized routes than alternatives 1 and 2 and less than alternative 3. It proposes the largest number of miles of road storage and decommissioning. There would be short-term adverse effects from the new construction proposed as well as from storage and decommissioning actions. In the long-term, native plants would revegetate disturbed areas along newly constructed trails and stored and decommissioned sites. Site restoration, noxious weed treatment, and removal of these routes from use would reduce the risk of weed establishment or spread in these sites over time.

Resource Indicator 3: Management of "trails of interest", measured qualitatively

The CDNST within the planning area would be managed primarily for non-motorized use; approximately 3 miles of non-motorized trail would be reconstructed and approximately 1 mile of trail would be managed for seasonal motorized use (closed 10/15-6/30); less than 0.5 miles would be open to motorized use with no restrictions. The new non-motorized construction would be within or adjacent to a spotted knapweed occurrence. Project design features which require weed treatment prior to and after construction if needed would help to reduce spotted knapweed at the site.

The Helmville Gould Trail would continue to be managed for motorized use for vehicles 50 inches or less. Seasonal motorized use would be allowed from its intersection with the CDNST to Dalton Mountain. The trail would be closed to motorized use from October 15 - June 30 annually.

The Stonewall Trail would continue to be designated as a motorized trail. It would change from having no seasonal restrictions, to being closed to wheeled use from October 15 – June 30.

Both the Helmville Gould and the Stonewall trails would include realignment and reconstruction which could result in disturbance that could increase weed spread.

Modifying use on these popular trails to more non-motorized use would reduce the risk of noxious weed spread.

Resource Indicator 4: Resource protection measures

Under alternative 4, wheeled vehicle use would be allowed up to 300 feet from the edge of designated motorized routes for the purposes of dispersed camping or parking associated with camping. The resource protection measures described in alternative 2 would also apply to alternative 4. Proposed monitoring would increase the possibility of discovering any threats or disturbance to noxious weed occurrences and would allow for site-specific management changes if needed.

Cumulative Effects

Cumulative effects under alternative 4 would be similar to those identified under alternative 1. There would be fewer infested acres along motorized routes and fewer motorized routes associated with alternative 4, so direct and indirect effects would be expected to be reduced with this alternative as compared to alternative 1.

Summary of Effects

Implementing alternative 4 would reduce the mileage of open motorized routes as compared to alternatives 1and 2, and result in very similar mileage of open motorized routes as that proposed in alternative 3. Alternative 4 would have the highest mileage of routes that are closed to use (stored and decommissioned routes). This alternative would involve 23.5 miles of motorized road or trail construction or re-construction and 21 miles of new non-motorized trail construction. This would be more motorized construction than any other alternative. There would be more non-motorized construction than under alternatives 1 and 2, and less than under alternative 3. "Trails of interest" under alternative 4 would mostly provide for non-motorized use. The action alternatives include resource protection measures to reduce the likelihood of adverse impacts from this use.

Compliance with Forest Plan and Other Relevant Laws, Regulations, Policies and Plans

The Regulatory Framework for weeds numerous policies, laws, executive orders and other direction are in the Blackfoot Travel Plan Noxious Weed Report (Carsey 2013) in the project record. Directives from two sources are discussed below.

The HNF Forest Plan (USDA 1986) outlines noxious weed management objectives and control measures. Page II/22 states,

> "Implement an integrated weed control program in cooperation with State of Montana and County Weed Boards to confine present infestations, and prevent establishing new areas of noxious weeds. Noxious weeds are listed in the Montana Weed Law and designated by County Weed Boards.
>
> Integrated Pest Management, which uses chemical, biological, and mechanical methods, would be the principal control method. Spot herbicide treatment of identified weeds would be emphasized. Biological control methods would be considered as they become available.
>
> Funding for weed control on disturbed sites would be provided by the resource that causes the disturbance."

The Helena National Forest Weed Treatment Project FEIS and Record of Decision (USDA Forest Service 2006b, 2007) provides environmental standards and guidelines for control and management of noxious weeds, specifically the use and effects of herbicide application.

This project is consistent with all relevant direction, including the Forest Plan and the Helena National Forest Noxious Weed Treatment FEIS and Record of Decision (ibid.). Provisions from those documents are incorporated into design features for this project and this document serves as the weed analysis required.

Forest Plan amendments are proposed for Management Area N1 and R1 and for big game security.

Conclusions

Potential effects of the action alternatives on noxious weeds in the planning area would be similar. All action alternatives would have a lower potential to spread noxious weeds than the current condition (alternative 1) based on all the measures analyzed except new construction or route reconstruction which is not proposed under alternative 1. There would be differences between the action alternatives in most of the measures analyzed, but typically when one measure for a particular alternative would contribute to a lower risk of weed spread, another for the same alternative would contribute to more disturbance, which would encourage weed spread. Therefore, it is difficult to make a clear determination of which alternative would have the fewest adverse effects on noxious weeds.

Motorized routes generally increase the spread of weeds, because (1) motorized routes are often more accessible, (2) motor vehicles travel great distances, allowing visitors to access more terrain in a shorter time, including remote locations, and (3) motor vehicles have higher ground pressures and greater torque applied to soil and vegetation surfaces (Olive and Marion 2009). With fewer miles of motorized routes and more miles of non-motorized, stored and decommissioned routes, alternatives 2, 3, and 4 would be expected to reduce the risk of noxious weed introduction and spread compared to alternative 1.

Project design features would provide protection from adverse effects that would increase the spread of noxious weeds in the planning area. There are numerous project design features for the construction or reconstruction of roads and trails. Design features would minimize the effects of spread of weeds on equipment and would require restoration measures where needed to prevent weed establishment. Route inventories would be required prior to new road or trail construction, storage, or decommissioning and weeds occurring adjacent to the routes would be treated. Inventories and treatment of weeds along new routes, or stored or decommissioned routes, would be required one and three years after construction. Design features would minimize the spread of weed seed in road maintenance and in the use of gravel and other fill material.

Alternative 1

Alternative 1 does not propose any changes, and there would be no new effects from proposed actions under this alternative. There may, however, be consequences of not implementing an action alternative. For instance, alternative 1 has more miles of motorized routes and fewer miles of non-motorized routes than the action alternatives. Disturbance associated with the existing travel system would continue, and based on the number of miles and number of acres of existing weeds within 300 feet of roads and trails; alternative 1 would be expected to have a greater risk of weed spread within the planning area. Alternative 1 allows motorized vehicle use for 300 feet off designated motorized routes, as do the action alternatives, but alternative 1 does not include protection measures to prevent resource damage, so disturbance from motor vehicle use may be greater in these areas, and as a result, weed spread may also be greater. Although disturbance within 300 feet of motorized routes would be expected to be greater under alternative 1, the Forest has found the existing conditions to be within acceptable limits. With more motorized use on the three “trails of interest” compared to alternatives 3 and 4, alternative 1 would be expected to have greater potential for disturbance and greater risk of noxious weed spread on these trails than alternatives 3 and 4.

Alternative 2

Implementing alternative 2 would reduce the mileage of open motorized routes as compared to alternative1, but motorized mileage would be greater than under alternatives 3 and 4. Alternative 2 would have more miles of non-motorized routes than alternative 1 but less than alternatives 3 and 4. Alternative 2 would have the highest mileage of stored routes. This alternative would involve 2.2 miles of motorized road or trail construction or re-construction and 31.5 miles of new non-motorized trail construction. “Trails of interest” under alternative 2 would be managed as they are now, mostly for motorized use. Alternative 2 includes protection measures to reduce resource damage in the 300 foot motorized vehicle use areas of designated motorized routes.

Alternative 3

Implementing alternative 3 would reduce the mileage of open motorized routes as compared to alternatives 1and 2, and result in very similar mileage of open motorized routes as that proposed in alternative 4. Alternative 3 would have the highest mileage of non-motorized routes. This alternative would involve 3.7 miles of motorized road or trail construction or re-construction and 31.5 miles of new non-motorized trail construction. “Trails of interest” under alternative 3 would mostly provide for non-motorized use. Alternative 3 includes protection measures to reduce resource damage in the 300 foot motorized vehicle use areas of designated motorized routes.

Alternative 4

Alternative 4 would have fewer miles of motorized routes than alternatives 1 and 2 and slightly more than alternative 3. Alternative 4 would have more miles of non-motorized routes than alternatives 1 and 2 and less than alternative 3. It proposes the largest number of miles of road storage and decommissioning. This alternative would involve 23.5 miles of motorized road or trail construction or re-construction and 21 miles of new non-motorized trail construction. This would be more motorized construction than any other alternative. It would be more non-motorized construction than under alternatives 1 and 2, and less than under alternative 3. “Trails of interest” under alternative 4 would mostly provide for non-motorized use. Alternative 4 includes protection measures to reduce the potential for resource damage within 300 feet of designated motorized vehicle routes.

For more details on compliance with the Forest Plan, see appendix A and for more details on compliance with other regulations and policy, see the Noxious Weeds Report (Carsey 2014) in the project record.

Summary of Environmental Effects

Table 97. Summary comparison of environmental effects to noxious weed resources[1]

Resource Element	Indicator/Measure	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Noxious weeds	**Presence of weeds near roads and trials**				
	Within 300 feet of motorized routes	6008 acres	5830 acres	5382 acres	5356 acres
	Within 300 feet of non-motorized routes	87 acres	115 acres	155 acres	148 acres
	Within 300 feet of stored or decommissioned routes / closed	0 / 2846 acres	1531 / 1833 acres	2274 / 1761 acres	2612.5 / 1797 acres
	Within 300 feet of construction	0	1.5 acres (motorized)	13.4 acres (motorized)	23.5 acres (motorized) 36.5 acres (non-motorized)
	Level of motorized use, miles by route type				
	Motorized	535 miles	444 miles	349	352
	Non-motorized	71 miles	120 miles	158	130
	Stored	NA	135	76	82
	Decommissioned	NA	8	200	211
	Closed	142	NA	NA	NA
	Construction - motorized	0	2.2	3.7	4.7
	Construction – non-motorized		31.5	31.5	21
	Management of "trails of interest"				
	CDNST	Primarily motorized	Primarily motorized	Primarily non-motorized	Primarily non-motorized
	Helmville-Gould	Motorized	Motorized	Non-motorized	Motorized with seasonal closures
	Stonewall	Motorized	Motorized	Motorized with seasonal closures	Motorized with seasonal closures

Resource Element	Indicator/Measure	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	Protection measures				
		No protection measures for the 300 foot vehicle use area off motorized routes	Protection measures for the 300 foot vehicle use area off motorized routes	Protection measures for the 300 foot vehicle use area off motorized routes	Protection measures for the 300 foot vehicle use area off motorized routes

[1]Number of acres and miles are approximate.

The following table is a summary of the proposed route changes within 300 feet of noxious weed occurrences by alternative. The specific proposed changes that would occur near a species are listed.

Table 98. Summary of proposed route changes within 300 feet of noxious weed species by alternative.

Species	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Black henbane	Species would be subject to existing conditions	No change from alternative 1	Two routes (#467, U4128) would be changed from motorized to non-motorized.	No change from alternative 1
Common tansy	Species would be subject to existing conditions.	Mapped occurrence is not within 300 feet of routes. No change from alternative 1.	Mapped occurrence is not within 300 feet of routes. No change from alternative 1.	Mapped occurrence is not within 300 feet of routes. No change from alternative 1.
Dalmatian toadflax	Species would be subject to existing conditions.	One route (#4080) would change from closed yearlong in alternative 1 to decommissioned.	One route (#4080) would change from closed yearlong in alternative 1 to decommissioned.	One route (#4080) would change from closed yearlong in alternative 1 to decommissioned.
Leafy spurge	Species would be subject to existing conditions.	One route (U401) would change from UC-open in alternative 1 to open highway legal. #4135 would change from 09-RES to 01-STO. #404 would change from motorized to non-motorized. #441 would change from UC-	One route (U401) would change from UC-open in alternative 1 to decommissioned. #4135 would change from 09-RES to 01-STO. #329-J1 & J2 would change from naturally reclaimed to decommissioned. #404 would change from	One route (U401) would change from UC-open in alternative 1 to decommissioned. #4135 would change from 09-RES to 01-STO. #329-J1 & J2 would change from naturally reclaimed to decommissioned. #404 would change from

Species	Alternative 1	Alternative 2	Alternative 3	Alternative 4
		Open to open highway legal.	motorized to non-motorized. #467 would change from motorized to non-motorized. #441 would change from UC-Open to decommissioned.	motorized to non-motorized. #441 would change from UC-Open to M-07.
Oxeye daisy	Species would be subject to existing conditions	No change from alternative 1.	#626-B1 would change from open highway legal to M-08. #626-A1 would change from 09-RES to M-08.	#626-B1 would change from open highway legal to M-08.10. #626-A1 would change from 09-RES to M-08.10.
St. Johnswort	Species would be subject to existing conditions	Parts of #4043 would change from 12-RES to 01-STO.	Parts of #4043 would change from 12-RES to 01-STO. Part of #4043 would change from 12-RES to M-08	Parts of #4043 would change from 12-RES to 01-STO. Part of #4043 would change from 12-RES to M-08.10
Butter and eggs, Canada thistle, Common mullein, Houndstongue, Musk thistle, and Spotted knapweed	Species would be subject to existing conditions	Species occur near many routes. Changes would vary by alternative.	Species occur near many routes. Changes would vary by alternative.	Species occur near many routes. Changes would vary by alternative.

Threatened, Endangered and Sensitive (TES) Plants

Affected Environment

Sensitive species in the Northern Region of the Forest Service are those plant and animal species identified by the Regional Forester for which population viability is a concern. Viability concern is evidenced by (1) substantial current or predicted downward trends in population numbers or density and/or (2) substantial current or predicted downward trends in habitat capability that would reduce a species' existing distribution (Reel et al. 1989).

There are no known or suspected populations of federally listed threatened or endangered plant species in the Blackfoot travel planning area. The focus of this analysis is on Forest Service sensitive plant species.

The Helena National Forest has known or suspected occurrences of 21 species of sensitive plants. A complete list of these species and a description of associated habitat can be found in table 99 and (*Appendix A of the Botany Specialist Report in the project files*). The likelihood of occurrence of a given species within the planning area and status is listed in table 99.

Species known to occur in the planning area are considered with site-specific analysis in this section. Other species may have habitat in the planning area. Since that habitat is not mapped, site-specific effects to potential habitat or undiscovered occurrences cannot be analyzed. Effects to species with potential habitat in the planning area are considered in a general way. The species that are specifically addressed in this assessment are those identified as known (5 species, shown in gray shading) or possible (6 species, shown in bold type) in the planning area (table 99). Other species listed in table 99 do not have habitat in the planning area, would not be affected by the project and are not considered further in this analysis. For more details on these species and the regulatory framework that guides consideration and protection of sensitive and rare plants see the Botany Report and Biological Evaluation for Plants in the project record (Carsey 2014).

Table 99. Region 1 sensitive plant species that occur or may occur on the Helena National Forest

Species **(Family) Common Name**	**Known to occur on Helena National Forest**	**Known to occur in the Travel Planning Area**	**Known to occur within 300 feet of a road or trail in the Blackfoot Travel Planning Area**	**Likelihood of Occurrence in Blackfoot Travel Planning Area**
Amerorchis rotundifolia (Orchidaceae) Roundleaf orchid	No	No	No	Unlikely – Known from the Rocky Mtn. Front and the northwest corner of Montana in spruce forests along seeps and streams
Aquilegia brevistyla (Ranunculaceae) Smallflower columbine	No	No	No	Unlikely – In Montana, it is known only from the Little Belt Mountains in open woods and streambanks at mid-elevations in the montane zone.

Species **(Family)** **Common Name**	**Known to occur on Helena National Forest**	**Known to occur in the Travel Planning Area**	**Known to occur within 300 feet of a road or trail in the Blackfoot Travel Planning Area**	**Likelihood of Occurrence in Blackfoot Travel Planning Area**
Astragalus lackschewitzii (Fabaceae) Lackschewitz's milkvetch	No	No	No	Unlikely – Restricted to high elevation gravelly and rocky slopes and ridges, this species' habitat is not generally subject to human disturbance
Botrychium crenulatum **(Ophioglossaceae)** **Scalloped moonwort**	**No**	**No**	**No**	**Possible – Known from the Beaverhead-Deerlodge National Forest and in western Montana, it generally occurs in wet habitats with high cover. The project would occur in mostly dry Douglas-fir habitat but includes a few moist areas.**
Botrychium paradoxum **(Ophioglossaceae)** **Peculiar moonwort**	**Yes**	**No**	**No**	**Possible – This diminutive species is known from the Occidental Plateau, and near Irish Mine Hill. On the Helena NF, populations are in sagebrush/rough fescue and rough fescue, however other populations have been documented from mesic meadows associated with spruce and lodgepole pine forests in montane and subalpine (MNHP 2007)**
Cypripedium parviflorum **(Orchidaceae)** **Lesser yellow lady's slipper**	**Yes**	**No**	**No**	**Possible – Known from Divide landscape in fens, damp mossy woods, seepage area, and moist forest-meadow ecotone, in valleys & lower montane.**
Cypripedium passerinum **(Orchidaceae)** **Sparrow egg lady's slipper**	**No**	**No**	**No**	**Possible – This species is found in mossy, moist, or seepy places in coniferous forest; in northwestern Montana including Glacier National Park.**

Species **(Family) Common Name**	**Known to occur on Helena National Forest**	**Known to occur in the Travel Planning Area**	**Known to occur within 300 feet of a road or trail in the Blackfoot Travel Planning Area**	**Likelihood of Occurrence in Blackfoot Travel Planning Area**
Drosera anglica (Droseraceae) English sundew	Yes	Yes	No	**Known** –Two populations occur in the Indian Meadows RNA in the planning area. This species occurs with sphagnum moss in wet, organic soils of fens. Habitat is specialized.
Drosera linearis (Droseraceae) Slenderleaf sundew	Yes	Yes	No	**Known** – Two populations occur in the Indian Meadows RNA in the planning area in wet, organic soil of nutrient-poor fens (occurs with English sundew populations)
Epipactis gigantea (Orchidaceae) Stream orchid	No	No	No	Unlikely – This species is associated with seeps and springs, often thermal.
Goodyera repens (Orchidaceae) Lesser rattlesnake plantain	No	No	No	Unlikely – In Montana, it is known from the Little Belt and Big Snowy Mts. in moist, montane forests with mossy understory.
Grindelia howellii **(Asteraceae) Howell's gumweed**	**No**	**No**	**No**	**Possible –This species is an endemic known only from a cluster of sites northeast of Missoula, and a single county in Idaho.**
Juncus hallii (Juncaceae) Hall's rush	**Yes**	**No**	**No**	**Possible—Several populations occur on the Forest in the Big Belts and the Divide area. Moist to wet meadows.**
Oxytropis podocarpa (Fabaceae) Stalkpod locoweed	No	No		Unlikely – Habitat for this species is in the alpine zone.

Species **(Family) Common Name**	**Known to occur on Helena National Forest**	**Known to occur in the Travel Planning Area**	**Known to occur within 300 feet of a road or trail in the Blackfoot Travel Planning Area**	**Likelihood of Occurrence in Blackfoot Travel Planning Area**
Phlox kelseyi var. missoulensis (Phlox missoulensis) (Polemoniaceae) Missoula phlox	Yes	No	Approximately 19 acres of mapped occurrences within 300 feet of non-motorized trails and 17 acres of mapped occurrences within 300 feet of motorized routes	**Known**– Four populations occur in the planning area. It is known from east of the planning area; habitat is rough fescue meadow, exposed, limestone-derived slopes in foothills and montane.
Pinus albicaulis Pinaceae Whitebark pine	Yes	Yes	Approximately 1 mile of non-motorized trail and 14 miles of motorized routes within 300 feet of mapped occurrences	**Known** – Occurs on approximately 1800 acres scattered throughout the planning area. This species occurs in the planning area, and habitat is minimally suitable and limited in extent.
Polygonum douglasii ssp. austinae (Polygonaceae) Austin knotweed	Yes	No	No	Unlikely – This taxon is known from the Big Belts in open gravelly shale-derived soil of eroding slopes/banks or usually moist, barren shale slopes.
Saxifraga tempestiva (Saxifragaceae) Storm saxifrage	No	No	No	Unlikely – This species is a Montana endemic known only from vernally moist open sites and rock ledges at high elevations, west of Continental Divide.
Schoenoplectus subterminalis (Cyperaceae) Swaying bulrush	Yes	Yes	No	**Known** – This species is known from Indian Meadows RNA in the planning area, and sites in the Northwest primarily west of Continental Divide in open water and boggy margins of ponds, lakes, and sloughs.
Thalictrum alpinum (Ranunculaceae) Alpine meadow-rue	No	No	No	Unlikely – In Montana, this species is known from sites in the southwest corner, in moist alkaline meadows.

Species (Family) Common Name	Known to occur on Helena National Forest	Known to occur in the Travel Planning Area	Known to occur within 300 feet of a road or trail in the Blackfoot Travel Planning Area	Likelihood of Occurrence in Blackfoot Travel Planning Area
Veratrum californicum (Liliaceae) California false hellebore	No	No	No	Unlikely – In Montana it is known from four sites in Bitterroot Valley

*Species known to occur within 300 feet of existing roads or trails

Species Known in the Planning Area

As noted in the table above, there are five sensitive plants known to occur in the planning area. English sundew is a circumboreal species with scattered distribution over a large area. It is ranked as G5 (globally secure) by NatureServe and as S3 (vulnerable) in Montana (NatureServe 2012). This species occurs in two sites in the Indian Meadows RNA in the planning area. The occurrence is not in a road right of way or within 300 feet of a motorized or non-motorized or mountain bike trail.

Slenderleaf sundew is similar to English sundew and occurs in the same two sites in the planning area. The species is known from only four populations in Montana. It is ranked by NatureServe as G4 (apparently secure globally) and as S2 (imperiled) in Montana (NatureServe 2012). The occurrence is not in a road right of way or within 300 feet of a motorized or non-motorized or mountain bike trail.

Missoula phlox occurs in four known sites within the planning area, three occurrences in the northeast section of the planning area and one at the southeastern edge of the Granite Butte proposed RNA. Occurrences range in size from 0.2 acres to 24.5 acres. One occurrence, in the Granite Butte proposed RNA, is adjacent to Road 1884 and motorized trail 440 (designated under alternatives 2 and 3 as a mountain bike trail). One occurrence is intersected by non-motorized trail 440 and another is intersected by non-motorized trails 440 and 493. The species is ranked G2G3 (globally imperiled to vulnerable) and S2S3 in Montana where it is endemic to portions of the State. Although not widespread, occurrences may be large. The species typically occurs in open areas. Two occurrences in the planning area overlap occurrences of whitebark pine in open stands with low canopy cover. Potential threats to the species include competition from nonnative noxious weeds, recreation use, and development. Risk of disturbance is rated low but the population trend is not known (NatureServe 2012). This species could occur in other areas in the planning area, but has not been found in surveys. Negative survey information is available in the project file. Within the planning area, there are 18.8 acres of Missoula phlox within 300 feet of non-motorized trails and 16.6 acres within 300 feet of motorized routes.

Whitebark pine occurs on approximately 1,800 acres scattered throughout the planning area. Whitebark pine is found at elevations that range from 4,300 feet to 12,100 feet rangewide; in Montana it is typically found between 5,900 and 9,300 feet on cold, snowy and generally moist sites (Arno and Hoff 1989). It is often found on ridges and near the timberline where trees are exposed to strong desiccating winds. Whitebark pine has been proposed for federal listing under the Endangered Species Act. It is ranked by NatureServe as G3G4 (globally vulnerable to apparently secure) and S2 (imperiled) in Montana. Threats to the species include white pine blister rust, mountain pine bark beetle, succession resulting from fire suppression, climate change resulting in decreases of suitable habitat and combinations of these threats (NatureServe

2012). White pine blister rust infestations have resulted in over 50 percent mortality in some stands. A small percentage of trees appear to be resistant to the rust (Keane et al. 2012). The decline of this keystone species is expected to affect ecosystem functioning and biodiversity (Keane and Parsons 2010, NatureServe 2012). In Region 1, over half of the whitebark pine on National Forest System lands occurs in wilderness and roadless areas where trees are less susceptible to recreation and vehicle use. Whitebark pine occurs on approximately 2 percent of the Helena National Forest. The whitebark pine in the planning area is much less than 1 percent of the whitebark pine on the Helena National Forest. Within the planning area, there are currently approximately 0.8 miles of non-motorized trails and 14.3 miles of motorized routes within 300 feet of mapped whitebark pine (table 99).

Swaying bulrush is known from the Indian Meadows RNA on the Helena National Forest. This species occurs in very wet sites on the edges of ponds, bogs and open water. It does not occur in a road right of way or within 300 feet of a motorized or non-motorized trail.

Species Possibly Occurring in the Planning Area

As noted in table 99, there are six sensitive plant species with potential to occur in the planning area. Scalloped moonwort has not been found to date on the Helena Forest. This species has been found on the Beaverhead-Deerlodge Forest, immediately adjacent to the Helena National Forest in the Occidental Plateau area. The habitat for this species is moist to wet areas, similar habitat to that of Hall’s rush. This species is searched for in all wetland and riparian surveys.

Peculiar moonwort is known from two occurrences on the Helena National Forest. The species has been found in sagebrush/rough fescue shrublands and rough fescue grasslands on the Helena.

Lesser yellow lady’s slipper has not been found to date on the Forest. An unverified record of this species from the Mount Helena area has been determined to be unfounded. Habitat for this species includes fens, moist woods and seepage areas in the lower mountain areas. Limited habitat exists in the planning area due to the low elevation that this species occupies, along with the moist habitat requirements.

Sparrow egg lady’s slipper occupies peaty soils in ecotones between wet mossy coniferous forests and wetlands or streams and in mossy, moist, or seepy places in coniferous forests, often on calcareous substrates. Searches have been conducted for this species in the planning area, but no occurrences have been found.

Howell’s gumweed has not been found on the Helena Forest but is known from an area west of the Blackfoot landscape. It may have habitat in the planning area in natural and human-created vernally moist, lightly disturbed soil such as roadsides.

Hall’s rush occurs in an unknown number of sites. Some resources list thirteen known populations on the Forest. The Montana Heritage database identifies eight populations on the Helena National Forest (three of the Heritage Program populations were again located by HNF personnel in 2009). Twelve populations were found by Helena National Forest personnel in 2009. This species typically occurs in moist grasslands and sedge meadows (NatureServe 2012, Poole and Heidel 1993). The Helena populations are on the edge of more moist riparian or wetland areas, similar to the habitat for scalloped moonwort. Many negative surveys were found during wetland identifications (Olsen 2011). The populations tend to be small and isolated; it is likely that many populations could exist, particularly in the area where other known populations are concentrated.

All species on the sensitive list are searched for in any sensitive plant surveys. Numerous past vegetation data collection efforts by Forest personnel and MTNHP staff have failed to discover sensitive plant populations in the planning area (negative surveys in the GIS data).

This analysis focuses on these 11 species that are known to occur or have potential to occur in the planning area, with particular attention paid to Missoula phlox and white bark pine since they are known to occur within 300 feet of roads and trails in the planning area.

Environmental Consequences

Methodology

This analysis discusses general potential effects to Region 1 sensitive plant species from proposed changes to the transportation system in the Blackfoot travel planning area. It focuses on those species the 5 species known to occur in the planning area and the 6 species with potential to occur. It further refines analysis to the site-specific effects to known sensitive plant occurrences near routes proposed for changes. Elements of the proposed project that are considered include: (1) adding resource protection measures (minimization criteria) to the 300 foot vehicle use area adjacent to motorized roads and trails, (2) changing the use designation of roads and trails near sensitive plant occurrences, (3) constructing new routes or decommissioning or storing routes near occurrences, (4) creating conditions for new weed establishment or spread. Elements of the proposed project that do not affect sensitive plants, such as route changes distant from sensitive plants, are not considered.

In order to compare the effects of the alternatives on sensitive plants, we used the following measurement indicators:

- Presence near roads or trails measured by both miles and acres of habitat within 300 feet of a road or trail
- Risk of invasive plant spread into sensitive plant habitat, measured by distance to invasive plant occurrence and level of risk (low, moderate, or high)

We selected a 300-foot area for analysis because it is the area where motorized vehicle use would be allowed off designated motorized routes under all alternatives (as described in more detail in chapter 2) and where dispersed recreational use is most likely to occur. While vehicle use is not allowed on non-motorized routes, the same 300-foot analysis area was used for consistency.

The methodology used in this analysis includes best available data from several geospatial layers using known sensitive plant populations to predict sensitive plant habitat. For Missoula phlox, the project GIS specialist calculated acres of mapped occurrences within 300 feet of roads and trails (as mapped in the GIS layers in the project file) as a quantitative measure for resource indicators.

For whitebark pine, the project GIS specialist calculated the numbers of miles of motorized and non-motorized roads and trails within 300 feet of whitebark pine. Calculations were based on the mapped whitebark pine layer, which shows areas where whitebark pine is abundant or the dominant tree species. Whitebark pine also occurs as a minor component of mixed conifer stands, and in those cases, it may not be mapped. The analysis focuses on the mapped occurrences, as those areas should catch most of the whitebark trees in the area.

Numerous surveys and inventories have been completed in the Blackfoot planning area over the past 20 years or more: FIA grid intensification plots, a systematic placement of intensive inventory plots where data collectors are instructed to search for and identify sensitive plant species; roadside surveys associated with noxious weed infestations (Barton and Crispin 2002); project level reconnaissance by Forest Service field crews; riparian study plots; and field survey crew inventories (Bricker 2009). Negative survey information is used in identifying potential habitat, and as well as to help identify areas that do not support sensitive plant habitat. Negative and positive data from those surveys are available in the GIS data for the project. The project botany report identifies methods used in various surveys.

A literature review of available information on sensitive plant species, habitat and disturbance process effects on flora has been completed. See the References Cited at the end of this document as well as the Botany Report and Biological Evaluation (Carsey 2014) for a complete list.

Assumptions

The following assumptions were used for the purpose of this analysis. However, the final decision document (Record of Decision) will determine what features are adopted.

- The analyses and decisions made in the Record of Decision for the HNF Weed Treatment Project FEIS are incorporated in noxious weed analysis and management on the HNF.
- All mitigation measures and project design features listed in the FEIS would be implemented.
- Any roads proposed for storage would be at a 3S level. See FEIS table 4 for definitions.
- Any roads proposed for decommissioning would be at a 4 level. See FEIS table 4 for definitions.
- All changes proposed in the FEIS for each alternative would be fully implemented.
- The resulting motorized route system would be managed as described in the FEIS and motorized use would occur where it is proposed. The effects analysis describes the effects resulting from the change between where people are driving (alternative 1) and where people would drive (alternatives 2, 3, and 4).
- Alternatives 2, 3 and 4 would allow wheeled motorized vehicle travel within 300 feet of the edge of designated motorized routes (unless signed otherwise) for the purposes of dispersed camping (and parking associated with camping) as long as the following resource protection measures are met. It would also allow parking safely next to the side of the road:

♦ No new permanent routes are created by this activity

♦ No damage to existing vegetation, soil, or water resources occurs

♦ Travel off-route does not cross streams

♦ Travel off-route does not traverse riparian or wet areas

♦ Recreationalists will use the most direct route to disperse camp

♦ Recreationalists must select their site by non-motorized means

Information Used

A geodatabase (BlkftNonwinTMP.gdb) contains numerous geospatial layers that provide the data used in this analysis. This geodatabase is available in the project file. The project GIS specialist calculated acres of Missoula phlox within 300 feet of routes and miles of routes within 300 feet of whitebark pine for each alternative. Excel files showing the results of those calculations may be found in the project file.

Experience, GIS analysis and information from plant surveys in adjacent areas and specific plant surveys in high potential habitat were used to determine areas that would be more likely to support sensitive plant populations.

The Montana Natural Heritage Program (MTNHP) maintains a statewide database for sensitive species. Data from the MTNHP were used for known sensitive plant populations.

Past surveys by the MTNHP (Barton and Crispin 2002, Poole and Heidel 1993) as well as past surveys by the HNF ecologist were used to focus the survey work.

Both negative and positive survey information was used from all surveys in preparing this analysis.

Spatial and Temporal Context for Effects Analysis

The geographic scope of analysis for direct and indirect effects is within 300 feet of roads and trails. This is the area where motorized vehicle use is allowed off motorized routes under all alternatives (as described in more detail in chapter 2) and where dispersed use is most likely to occur. For cumulative effects the spatial boundary is the Blackfoot travel planning area. This is an appropriate spatial area for determining effects to plant species because it encompasses the entire area where disturbances related to the project would occur.

The temporal bounds include the past, present and the foreseeable actions described in the "Cumulative Effects" section of this report. Past actions are considered as part of the existing condition. Short-term adverse effects (up to 5 years) from soil disturbance would be apparent until the native ground vegetation regenerates. Some areas used repeatedly for dispersed camping or other activities may not recover for many years after disturbance is no longer taking place. Studies have shown that recovery may take more than 17 years (Parsons and DeBenedetti 1979, Cole 1989). The threat of indirect adverse effects from weed competition could continue during the time that weed seed remains viable in the seed bank (up to 30 years). The analysis focuses, however, on effects that would occur within 10 years since those are the ones that can be anticipated and analyzed

Past, Present, and Foreseeable Activities Relevant to Cumulative Effects Analysis

Cumulative effects result from the incremental impact of an action when added to the effects of past, present, and reasonably foreseeable future actions. Past activities are considered part of the existing condition and are discussed within the affected environment section above. This is because the existing conditions reflect the aggregate impact of all prior human actions and natural events that have affected the environment and might contribute to cumulative effects. By looking at current conditions, we are sure to capture all the residual effects of past human actions and natural events, regardless of which particular action or event contributed to those effects.

Present and future activities that are associated with the proposed route system could impact sensitive plant species growing along or in the vicinity of designated routes. These activities may include routine maintenance, such as clearing brush, posting signs, cleaning, or clearing of debris, or increased levels of dispersed camping or recreation along and near routes. Future projects in timber harvest and vegetation treatments, range management, fuel treatments, recreation, reforestation, road storage and decommissioning, and special uses may also contribute impacts to sensitive plant species. A complete list of current and known future projects is in appendix D.

The effects of unknown future projects (e.g., vegetation management) would likely be minimal or similar to those described in this analysis if existing management guidelines (such as field surveys, protection of known rare species locations, and noxious weed mitigations) remain in place.

Effects Common to All Alternatives

Direct and Indirect Effects

Use of established routes has the potential to affect sensitive plant occurrences, either directly by damage or mortality to individual plants or indirectly by altering the habitat through soil disturbance or fragmentation, changes in hydrologic functioning, effects from dust, or by the introduction of nonnative invasive plant species that can out-compete sensitive species for water, sunlight, and nutrients. Potential adverse effects may be different for woody and herbaceous species.

Comparing the effects of different types of use on ground disturbance and habitat degradation is complex and must involve consideration of numerous factors. Where use is light or where management programs provide adequate protection, impacts may not be unacceptably severe. However, where use is heavy and protective actions are inadequate, impacts may be severe and widespread (Cole 1994). Location and design of roads and trails may add to or reduce the potential for impacts from recreational use. The types of recreational activities and modes of travel continue to diversify resulting in a wider range of effects on ecological conditions. Impacts associated with motorized travel differ greatly from those associated with equestrian, foot traffic and mountain bike use (Cole and Spildie1998, Payne et al. 1983, Torn et al. 2009). In general, motorized uses are considered to have greater potential effects on the landscape and on the introduction and spread of noxious weed species than non-motorized uses, primarily due to (1) the accessibility of motorized routes, (2) the ability of vehicles to travel great distances, allowing visitors to access more terrain in a shorter time, including remote locations, and (3) the higher ground pressures and greater torque applied to soil and vegetation surfaces (Olive and Marion 2009). Non-motorized uses, however, may also cause serious damage to soil and native vegetation, but effects generally tend to be more localized (Cole 1989, Potito and Beatty 2005, White et al. 2006). Among non-motorized uses, horse use has been shown to have significantly greater effects (for trampling and erosion indicators) than hiking, llama use, and mountain biking (Cole and Spildie 1998, Olive and Marion 2009). White and others (2006) found that certain impacts to mountain bike trails, especially width, are comparable or less than hiking or multiple-use trails, and much less than impacts to equestrian or off-highway vehicle trails.

For the purposes of analysis, it is assumed that motorized uses usually create more ground disturbance than non-motorized uses; therefore, motorized uses are more likely to degrade habitat and promote nonnative invasive plant establishment and spread, which could affect sensitive plants. Chapter 2 of the FEIS shows miles of routes by route type and alternative.

The overall general effects to sensitive plants from motorized vehicle use on and off-road is elaborated on in more detail in the botany report in the project record (Carsey 2014).

In this planning area most occurrences of sensitive plants are distant from existing and proposed roads and trails; those occurrences would not likely be affected by the proposed planning effort. Sensitive plant occurrences that are within 300 feet of roads and trails are most likely to be affected by proposed actions since most recreationists tend to stay near roads and trails and since wheeled motorized vehicle use is allowed under all alternatives up to 300 feet from designated routes (as described in more detail in chapter 2). For the most part, potential effects of all alternatives are similar.

In the planning area, there are Missoula phlox locations within 300 feet of four different roads or trails (table 101). Roads and trails also pass through numerous whitebark pine stands. The effects discussed below relate mainly to the three occurrences of Missoula phlox and the whitebark pine stands that occur within 300 feet of roads or trails. Other species and occurrences are very unlikely to be affected by any aspect of the planning effort. Effects discussed in this report are potential effects that could result from proposed activities. The likelihood of adverse effects actually occurring would depend on use patterns in the planning area.

Table 100. Miles of roads and trails within 300 feet of known whitebark pine stands

Designation	Alternative1 (miles)	Alternative 2 (miles)	Alternative 3 (miles)	Alternative 4 (miles)
Motorized	14.3	14.3	4.98	3.43
Non-motorized	0.8	8.9	10.8	10.5
Motorized new construction	0	0	0	1.5
Non-motorized new construction	0	0	0	1.3

There are approximately 55 road or trail segments that occur within 300 feet of known whitebark pine stands. For a complete listing, refer to the Botany Report and Biological Evaluation in the project record (Carsey 2014).

Table 101. Roads or trails within 300 feet of known occurrences of Missoula phlox

Road/Trail Number	Alternative 1	Alternative 2	Alternative 3	Alternative 4
440 (2 sections) CDNST	NOMTR	NOMTR	NOMTR-FS	NOMTR
493	NOMTR	NOMTR	NOMTR-FS	NOMTR
440[1]	Open, highway legal	Open, highway legal	Open, highway legal	Reconstruct non-motorized trail to east of 1884
1884[1]	Open, highway legal	Open, highway legal	Open, highway legal	Open, highway legal

[1]This section of 440 is the same as Rd. 1884 under alternatives 1, 2 and 3.

NOMTR = non-motorized trail

NOMTR-FS = Non-Motorized System Trail, Foot & Stock Only

Effects Common to All Action Alternatives

Many of the changes proposed to the travel system under alternatives 2, 3 and 4, such as road decommissioning and storage actions (which involve use of mechanical equipment and ground disturbance), level of motorized use in the planning area, management changes to “trails of interest”, amount of new construction, and protection measures for vehicle use within 300 feet of motorized routes would have the potential to affect sensitive plants. Proposed actions may have short-term adverse effects and long-term beneficial effects. For instance, road storage or decommissioning may have short-term adverse effects resulting from the use of mechanized equipment to recontour the ground surface or obliterate access points. These actions may remove native vegetation and create conditions suitable for establishment of noxious weeds. However, over the long term, road storage or decommissioning would have beneficial effects by removing routes from use and allowing for natural revegetation with native plants. Project design features have been included in this project to reduce the potential for adverse effects to sensitive plants (chapter 2).

Programmatic Forest Plan Amendments for Management Areas N1 and R1 and for Big Game Security

The proposed programmatic Forest Plan Big Game Security Amendment would not change the status of any roads or trails but would provide a different method of evaluation of elk security in the planning area. The amendment would not have any direct or indirect effects on R1 sensitive plant species. Roads and trails that are in the vicinity of sensitive plants and may affect the plants are considered under each alternative discussion. Roads subject to closures are listed in chapter 2.

The Forest Plan Amendment for Management Areas N1 and R1 would allow a motorized segment of trail #440 in T 13N R7W Sections 15, 16, 21, and 22 in Management Area N1. Although this portion of trail #440 was in existence in this location and open for motorized use when the Forest Plan was signed, the plan did not acknowledge this fact and an amendment is needed now as part of this planning effort. Since this trail has been used by motorized vehicles in the past, there would be no change under alternatives 2 and 3 and no effects that would not also occur under alternative 1 (except for the resource protection measures that would be instituted for use 300 feet from the edge of the trail discussed above). Under alternative 4, trail #440 would be reconstructed to the east of Road 1884 and would be non-motorized.

The proposed programmatic Forest Plan Amendment for Management Areas N1 and R1 would also address a segment of the Helmville-Gould trail in MA R1. This trail does not pass within 300 feet of occurrences of Missoula phlox or whitebark pine and therefore this amendment would not affect TES plants.

Road Storage and Decommissioning

Road storage is used to refer to roads that are intended to be self-maintaining in a non-use status for up to 20 years, but remain on the National Forest System. This is accomplished through re-contouring or obliterating access points which may include rock or earth barriers, and may include the removal of culverts to restore watercourses to natural channels and floodplains. The remainder of the roadbed would remain intact so the road could be easily rebuilt for future use.

Decommissioning is a term used to refer to activities that result in the stabilization and restoration of unneeded roads to a more natural state (36 CFR 212.1) or, activities that result in restoration of unneeded roads to a more natural state (FSM 7705, FSM 7734).

Decommissioning would include construction of waterbars, outsloping, or selectively re-contouring, removal of culverts, restoration of watercourses, ripping 12-18 inches, seeding, fertilizing, treating noxious weeds, and scattering slash on slopes. These actions would involve localized ground disturbance, erosion and sedimentation in the short term (5 years). However, project design features (chapter 2), including surveys for sensitive plants, would be implemented for any new ground disturbing activities associated with storage and decommissioning. Implementing these features would ensure that short-term adverse impacts would be negligible to minor. Over the long term, storing and decommissioning roads would substantially reduce the areas open to motor vehicle use and these former routes would revert to naturally vegetated conditions.

New Construction and Reconstruction

New trail construction would occur within whitebark pine stands along the Stonewall Trail under all action alternatives. Milburn (2013b) estimates that approximately 375 whitebark pine trees could be removed as part of the trail construction. Milburn states that “the planned cutting would represent a loss of less than 1 percent of the population present in the contiguous stands affected, when all size classes are considered. Overall this loss is small, although large (>12’ tall) potentially seed-producing whitebark are particularly valuable to the population for future viability and may be somewhat concentrated near the trail area”.

Alternative 1 – No Action

Direct and Indirect Effects

By definition, direct and indirect effects (40 CFR 1508.8), and cumulative effects (40 CFR 1508.7) result from the proposed action, and thus are not germane to the no-action alternative. Under the no-action alternative, no changes would be made to the current transportation system, and there would be no new effects to sensitive species from proposed actions. There would be consequences of not implementing proposed actions; however, so potential effects are discussed below.

Under the no-action alternative current motorized uses would continue, including use of currently unclassified routes and those acquired as part of the land exchange process or existing prior to the amended Forest Plan. There are approximately 60 miles of unclassified routes in the planning area. There would be no new route construction or route designation changes under this alternative.

Resource Indicator 1: Presence of sensitive plants near roads or trails

Whitebark pine and Missoula phlox are the two known sensitive plant species in the planning area within 300 feet of motorized or non-motorized roads or trails. As shown in table 102, there are approximately 19 acres of mapped Missoula phlox occurrences within 300 feet of non-motorized trails and 17 acres of mapped occurrences within 300 feet of motorized routes. Approximately 1 mile of non-motorized trail and 14 miles of motorized routes occur within 300 feet of mapped whitebark pine occurrences. There are no known considerable adverse impacts to sensitive plants from the existing road and trail system.

Table 102. Alternative 1 existing condition

Species	Within 300 feet of Non-Motorized Trails	Within 300 feet of Motorized Trails
Missoula phlox	18.8	16.6

Whitebark pine	0.8	14.3

Vehicle use within 300 feet of motorized routes

Alternative 1 would continue to implement the 2001 Tri-State OHV Decision allowing motorized use within 300 feet from the edge of roads and trails for the purpose of dispersed camping (as described in more detail in chapter 2). Alternative 1 would not include the additional resource protection measures that are included in the action alternatives, although closure orders could be used if resource issues are observed. As a result, all off-road impacts from motorized use may not be minimized to the extent that they would under the action alternatives. In the planning area since 2001, however, the Forest has determined that the effects of this use have been within acceptable environmental limits. Where site-specific issues have arisen, the Forest has been able to address them via site-specific area closures or restrictions (chapter 2).

Miles and designation of routes in the vicinity of Missoula phlox

For routes within 300 feet of Missoula phlox occurrences, two would be non-motorized and two would be open to highway legal vehicles. Approximately half the phlox occurrence (#32) adjacent to open, highway legal routes (440 and 1884) would be within 300 feet of the edge of the routes. The two routes pass through areas that are not forested and the terrain is not ideal for dispersed camping, so off-road use may not occur. If motorized vehicles are used in this area, they could damage Missoula phlox plants. There are no resource protection measures to reduce or eliminate damage from vehicle use within or adjacent to the Missoula phlox occurrence. Table 101 shows the miles of routes within 300 feet of Missoula phlox occurrences for all alternatives.

Miles and designation of routes in the vicinity of whitebark pine

Under this alternative, there are 14.3 miles of motorized routes within 300 feet of whitebark pine stands. There is no known damage to trees from vehicle use or dispersed camping, but adverse effects are possible (see the Effects Common to All Alternatives section above). Areas that receive more use, such as trails to lookout towers, would be most susceptible to off-road use and resource damage in whitebark pine stands. Table 100 shows the miles of routes within 300 feet of whitebark pine stands for all alternatives.

Management of “trails of interest”

Three trails in the planning area are high-profile or “trails of interest” because of their popularity of use and public interest: CDNST, Helmville Gould and Stonewall. Under alternative 1, these trails would be managed as they are currently; no changes are proposed (see appendix G of the FEIS for a map of these trail corridors and the types of uses that would continue to be permitted and a summary by trail section in appendix C).

The CDNST (trail 440) would continue to be a mix of motorized and non-motorized sections; Flesher Pass to Stemple Pass would continue as a motorcycles-only trail and Stemple Pass to Marsh Creek would continue as a motorized trail (open to vehicles 50 inches or less in width with no seasonal restrictions). Approximately 4 miles of the CDNST would be located along a road. There would be no increase in motorized use along the CDNST.

The Helmville Gould Trail (trail 467) is not within 300 feet of any mapped sensitive plants, so no effects to sensitive plants would be likely from use of the trail.

The Stonewall Trail (trail 417) would continue to be managed for motorized use (open to vehicles 50 inches or less in width with no seasonal restrictions).

With more motorized use on these trails compared to alternatives 3 and 4, alternative 1 would have a greater risk of disturbance to sensitive plants than the CDNST and the Stonewall trails than alternatives 3 and 4.

Resource Indicator 2: Risk of non-native invasive plant spread into sensitive plant occurrences

The risk of invasive plant spread is estimated by proximity of the invasive occurrence to the sensitive plant occurrence, the presence of a road or trail between the two occurrences, motorized or non-motorized status of the route, and the invasive potential of the weed species. Table 103 shows occurrences of Missoula phlox and whitebark pine that are near or intersect non-native invasive plant infestations and are within 300 feet of roads or trails. Whitebark pine occurrences in table 103 are within 1 mile of infestations. Other whitebark stands may be susceptible to weed spread from infestations that are farther but on routes that connect with the route near or through the whitebark pine stand. Those infestations could not be as clearly associated with spread into particular whitebark pine stands.

For Missoula phlox, occurrence # 32 is most vulnerable to the spread of existing weeds since it is immediately adjacent to a large occurrence of spotted knapweed, and parts of the mapped knapweed occurrence already overlap the mapped phlox occurrence. It is also adjacent to a road that is open to highway legal vehicles, and 300 feet on either side of the road would be open to motorized vehicle use for dispersed camping. There are no resource protection measures under this alternative to reduce or eliminate effects to the sensitive plant occurrence from vehicle use.

For whitebark pine, stands with motorized routes running through them and infestations of weed species compatible with relatively dry conditions would be most susceptible to the spread of non-native invasive plants.

Table 103. Risk of invasive plant spread to Missoula phlox and whitebark pine-alternative 1

Phlox occurrence # / Whitebark pine occurrence #[1]	Distance from invasive plant species occurrence[2]	Risk of invasive plant spread
8 / 51	466 feet (yellow toadflax) 500 feet (spotted knapweed) 565 feet (houndstongue)	MODERATE – non-motorized trails through all weeds
29 / 48	773 feet (houndstongue)	LOW – Small parts of the occurrence are crossed by non-motorized trails, but no road or trail goes between the invasive plant occurrence and the phlox occurrence.
32 / 40	Immediately adjacent to large occurrence of spotted knapweed	HIGH – The entire phlox occurrence is adjacent to a motorized route. The area may not be used for camping but could be used for hunting.
NA / 39[1]	2418 feet from spotted knapweed and road	LOW – Road decommissioned under all alternatives
NA / 46	Immediately adjacent to spotted knapweed and an occurrence extending into stand either side of road	HIGH – Road will continue to be motorized with restrictions from 10/15 to 12/1.
NA / 15	4273 feet from spotted knapweed	LOW – Road decommissioned under all alternatives.

Phlox occurrence # / Whitebark pine occurrence #[1]	Distance from invasive plant species occurrence[2]	Risk of invasive plant spread
NA / 53	Road runs through stand	HIGH – Spotted knapweed and musk thistle are adjacent to road throughout polygon. Road would be open to highway legal vehicles.
NA / 40	649 feet from Canada thistle and immediately adjacent to one infestation	MODERATE – Even though Canada thistle is immediately adjacent, it requires moist conditions and may not spread into the whitebark pine stand.
NA / 41	Road runs through stand. Canada thistle along road.	MODERATE - HIGH – Road is open to highway legal vehicles and Canada thistle occurs all along the road. It may not spread if conditions in stand are dry.
NA / 57	Road runs through stand. Spotted knapweed along road.	HIGH – Route is open to motorized use with seasonal restrictions. Spotted knapweed runs along length of route and may spread into the whitebark pine stand.
NA / 16	Road and Canada thistle are adjacent to the stand.	MODERATE – HIGH --Road is open to highway legal vehicles, so use may occur within 300 feet. Canada thistle may not spread if conditions in stand are dry.

[1]The Missoula phlox ID # (SONUM) is from the Montana Natural Heritage database. The ID number for whitebark pine stands is the FID # from the Helena National Forest database.

[2]Distances are from Arcmap measurements and approximate.

Irreversible and Irretrievable Commitments

Under alternative 1 there would be no specific provisions for resource protection within 300 feet of motorized roads and trails that is available for vehicle use for dispersed camping. As a result, it is possible effects may not be minimized to the extent that they would under the action alternatives. If resource impacts are observed under alternative 1, closure orders could be used.

Alternative 2

Project Design Features

Project design features specific to TES plants are listed in chapter 2 starting on page 43. These design features apply to alternatives 2, 3 and 4.

Direct and Indirect Effects

Alternative 2 provisions that would be different from the existing condition (alternative 1) and that may affect sensitive plants include: (1) implementation of resource protection provisions for vehicle use within 300 feet of designated motorized routes, (2) differences in the number of miles and permitted uses of routes in the vicinity of whitebark pine, and (3) the potential for spread of noxious weeds in the planning area where permitted use changes are proposed.

Table 104 shows that under alternative 2, there would no change from alternative 1 in the acres of Missoula phlox within 300 feet of non-motorized trails, and only a slight reduction in motorized trail proximity. For whitebark pine, a substantial increase in the proximity to non-motorized trails would occur, but there would be no change in motorized route proximity

Table 104. Proximity of roads and trails to Missoula phlox and whitebark pine under alternative 2

	Alternative 1 – Existing Condition		Alternative 2	
Species	**Within 300 feet of Non-Motorized Trails**	**Within 300 feet of Motorized Trails**	**Within 300 feet of Non-Motorized Trails**	**Within 300 feet of Motorized Trails**
Missoula phlox	18.8 acres	16.6 acres	18.8	16.5
Whitebark pine	0.8 miles	14.3 miles	8.9	14.3

Resource Indicator 1: Presence of sensitive plants near roads or trails

Road and trail status for routes near Missoula phlox occurrences would be the same as those for alternative 1. The status of some routes near whitebark pine stands would change under alternative 2. Alternative 2 includes changes to the provisions for vehicle use within 300 feet of roads and trails.

Vehicle use within 300 feet of motorized routes

Under alternative 2, wheeled motorized vehicle use for the purposes of dispersed camping and parking associated with camping would be allowed up to 300 feet from the edge of designated motorized routes as long as:

- No new permanent routes are created by this activity
- No damage to existing vegetation, soil, or water resources occurs
- Travel off-route does not cross streams
- Travel off-route does not traverse riparian or wet areas
- Recreationalists will use the most direct route to disperse camp
- Recreationalists must select their site by non-motorized means

Parking safely next to the side of the road would also be allowed. Proposed monitoring would increase the chances of discovering any threats or disturbance to sensitive plant occurrences and would allow for site-specific management changes if needed.

For routes within 300 feet of Missoula phlox occurrences (table 104), two would be non-motorized and two would be open to highway-legal vehicles. Approximately half the phlox occurrence adjacent to open, highway legal routes (440 and 1884) would be within 300 feet of the edge of the routes. These two routes pass through areas that are not forested and may not be conducive to dispersed camping, so the area may not receive much off-road use. If vehicle use does occur in this area, it could cause ground disturbance and damage to Missoula phlox plants. The criteria listed above would limit resource damage and allow for earlier detection and management changes if needed.

Miles and designation of routes in the vicinity of Whitebark pine

Under this alternative, there are 14.3 miles of motorized routes within 300 feet of whitebark pine stands, the same as for alternative 1 (table 100). There is no known damage to trees from vehicle use or dispersed camping, but adverse effects are possible (see the Effects Common to All Alternatives section above). Areas that receive more use, such as trails to lookout towers, would be most susceptible to off-road use and resource damage in whitebark pine stands. Under this alternative, motor vehicle use within 300 feet of roads and trails would be subject to resource protection measures including monitoring, making damage to whitebark pine stands less likely under alternative 2 than alternative 1.

The uses permitted on routes within 300 feet of whitebark pine would change for approximately 18 route segments. These changes would result in increased use in one case, essentially no change for six of the route segments, and less use on over half of the route segments. These changes would result in less risk of disturbance to whitebark pine stands than under the current conditions.

Management of "trails of interest"

Three trails in the planning area are high-profile or "trails of interest" because of their popularity of use and public interest: CDNST, Helmville-Gould and Stonewall. Under alternative 2, these trails would be managed as they are currently; no changes are proposed (see appendix G for a map of these trail corridors and the types of uses that would continue to be permitted and a summary by trail section in appendix C). The CDNST (trail 440) would continue to be a mix of motorized and non-motorized sections; Flesher Pass to Stemple Pass would continue as a motorcycles-only trail and Stemple Pass to Marsh Creek would continue as a motorized trail (open to vehicles 50 inches or less in width with no seasonal restrictions). Approximately 4 miles of the CDNST would be located along a road. There would be no increase in motorized use along the CDNST.

The Helmville-Gould Trail (trail 467) would continue to be managed for motorized use. The trail is not within 300 feet of sensitive plants, so no sensitive plants would be affected by the trail.

Stonewall Trail (see appendix G of the FEIS for a map, trail 417) would continue to be managed as motorized trails (open to vehicles 50 inches or less in width) with no seasonal restrictions.

With more motorized use on these trails compared to alternatives 3 and 4, alternative 2 would be expected to have greater potential for disturbance to sensitive plants.

Resource Indicator 2: Risk of invasive plant spread into sensitive plant occurrences

The risk of invasive plant spread is estimated by proximity of the invasive occurrence to the sensitive plant occurrence, the presence of a road or trail between the two occurrences, motorized or non-motorized status of the route, and the invasive potential of the weed species (table 105). For alternative 2, the risk of invasive plant spread into Missoula phlox occurrences would be the same as for alternative 1, with the exception described above for increased monitoring and resource protection where vehicles are used off road and the minor changes shown in bold in table 105. Although there would be a few changes to route designations with alternative 2 (seasonal storage, longer seasonal restrictions), the changes would not be great enough to reduce risk. Other factors, such as the mileage of motorized routes, contribute to maintaining a higher risk of invasion. Resource protection provisions would help protect sensitive plants that occur in the 300 foot vehicle use area.

Table 105. Risk of invasive plant spread to sensitive plant occurrences-alternative 2

Phlox occurrence # / Whitebark pine occurrence #[1]	Distance from invasive plant occurrence (invasive plant species)[2]	Risk of invasive plant spread[2]
8 / 51	466 feet (yellow toadflax)	MODERATE – Route 493 runs through the

Phlox occurrence # / Whitebark pine occurrence #[1]	Distance from invasive plant occurrence (invasive plant species)[2]	Risk of invasive plant spread[2]
	500 feet (spotted knapweed) 565 feet (houndstongue)	yellow toad flax occurrence and to the spotted knapweed and houndstongue occurrences. 493 is open to all non-motorized uses. Route 440 does not pass through or lead to nearby weed occurrences.
29 / 48	773 feet (houndstongue)	LOW – Small parts of the occurrence are crossed by non-motorized trails, but no road or trail goes between the invasive plant occurrence and the phlox occurrence.
32 / 40	Immediately adjacent to large occurrence of spotted knapweed.	HIGH – The entire phlox occurrence is adjacent to a motorized route.
NA / 39	2418 feet from spotted knapweed and route	LOW – Route decommissioned under all alternatives.
NA / 46	Immediately adjacent to spotted knapweed and an occurrence extending into stand either side of road	HIGH – Route would continue to be motorized with seasonal restrictions.
NA / 15	4273 feet from spotted knapweed	LOW – Route decommissioned under all alternatives.
NA / 53	Routes run through stand	HIGH – Spotted knapweed and musk thistle are adjacent to road throughout polygon. Routes would be open to highway legal vehicles under all alternatives.
NA / 40	649 feet from Canada thistle and immediately adjacent to one infestation	MODERATE – Even though Canada thistle is immediately adjacent, it requires moist conditions and may not spread into the whitebark pine stand. **One route would be put into storage under alternative 2.**
NA / 41	Route runs through stand. Canada thistle along road.	MODERATE - HIGH – Canada thistle occurs along two motorized routes A third is outside the infestation but nearby and would remain open to highway legal vehicles. Canada thistle would be most likely to spread if site conditions are moist.
NA / 57	Routes run through stand. Spotted knapweed alongside one.	HIGH – One route would be stored. The other two, including the one surrounded by spotted knapweed would remain motorized.
NA / 16	Route and Canada thistle are adjacent to the stand.	MODERATE – HIGH --Route would be stored at least part time. Canada thistle may not spread if conditions in stand are dry.

[1]The Missoula phlox ID # (SONUM) is from the Montana Natural Heritage database. The ID number for Whitebark pine stands is the FID # from the Helena National Forest database.

[2]Distances are from Arcmap measurements and are approximate.

[3]Changes from the existing condition are in bold.

Effectiveness of Project Design Features

Proposed project design features would effectively protect existing R1 Sensitive plant species or any new ones discovered in the future from new road or trail construction, decommissioning or storage, road maintenance, and weed treatments. They would reduce the risk of spread of noxious weeds.

Irreversible and Irretrievable Commitments

One Missoula phlox occurrence (#32) and whitebark pine occurrences are threatened by motorized vehicle use under this alternative. Motorized vehicle use could result in damage or destruction of those sites if they are not protected from use. Project design features would protect occurrences from herbicide use, road maintenance and new road or trail construction, decommissioning or storage. Resource protection provisions for wheeled motorized vehicle use within 300 feet of designated routes would minimize the likelihood of adverse impacts and would include resource condition monitoring so that any threats to the species would be discovered early and management could be changed if necessary. With these measures in place, there should not be any irreversible or irretrievable commitments.

Short-term Uses and Long-term Productivity

Road storage is used to refer to roads that are intended to be self-maintaining in a non-use status for up to 20 years, but remain on the National Forest System. This is accomplished through re-contouring or obliterating access points which may include rock or earth barriers, and may include the removal of culverts to restore watercourses to natural channels and floodplains. The remainder of the roadbed would remain intact so the road could be easily rebuilt for future use.

Decommissioning is a term used to refer to activities that result in the stabilization and restoration of unneeded roads to a more natural state (36 CFR 212.1) or, Activities that result in restoration of unneeded roads to a more natural state (FSM 7705, FSM 7734) (table 4).

Decommissioning would include construction of waterbars, outsloping, or selectively re-contouring, removal of culverts, restoration of watercourses, ripping 12-18 inches, seeding, fertilizing, treating noxious weeds, and scattering slash on slopes. These actions would involve localized ground disturbance, erosion and sedimentation in the short term (5 years). However, project design features (chapter 2) would be implemented for any new ground disturbing activities associated with storage and decommissioning. Implementing these features would ensure that short-term adverse impacts would be negligible to minor. Over the long term, storing and decommissioning roads would substantially reduce the areas open to motor vehicle use and these former roads.

Unavoidable Adverse Effects

Some adverse effects are likely from the spread of non-native invasive plants due to disturbance resulting from implementation of alternative 2. For the most part, these effects would be short term and limited in magnitude and intensity due to the implementation of project design features and other resource protection measures and treatment through the Forest weed treatment program.

Cumulative Effects

Cumulative impacts result from the incremental impact of a proposed action when added to other past, present and reasonably foreseeable future actions. Effects must overlap in time and space to be considered cumulative.

Spatial Context for Effects Analysis

For cumulative effects the spatial boundary is the Blackfoot travel planning area. This is an appropriate spatial area for determining effects to plant species because it encompasses the entire area where disturbances related to the project could occur.

Temporal Bounds

The temporal bounds include the past, present and the foreseeable actions described in the "Cumulative Effects" section of this report. Past actions are considered as part of the existing condition. Short-term adverse effects (up to 5 years) from soil disturbance would be apparent until the native ground vegetation regenerates. Some areas used repeatedly for dispersed camping or other activities may not recover for many years after disturbance is no longer taking place. Studies have shown that recovery may take more than 17 years (Parsons and DeBenedetti 1979, Cole 1989). The threat of indirect adverse effects from weed competition could continue during the time that weed seed remains viable in the seed bank (up to 30 years). The analysis focuses, however, on effects that would occur within 10 years since those are the ones that can be anticipated and analyzed.

Past, Present, and Reasonably Foreseeable Future Activities Relevant to Cumulative Effects Analysis

Past, ongoing and future activities that could contribute to cumulative effects for this project are listed in appendix D. Past actions have shaped the existing condition of the project landscape. See the Existing Condition for the current status of sensitive plants. Past activities have had considerable impact on the landscape, but for the most part, they have not affected the sensitive plant species that occur in the planning area. Major past activities listed in appendix D are timber harvest, fire and fuels activities, grazing and mining.

Missoula phlox occurrences do not appear to have been affected by past timber, fuels reduction, wildfires, or prescribed burns.

Some whitebark pine stands have experienced wildfires. Most of the wildfires have been within the Scapegoat Wilderness, which is outside the project boundary. A few wildfires have been scattered through the planning area and some involved small areas of whitebark pine. These small areas may have been affected by past fire-fighting activities. Small areas of prescribed burns have also occurred in whitebark pine stands. Wildfires and suppression actions may have increased the presence of noxious weeds.

Generally, timber harvest has not occurred in whitebark pine stands. There was a cut in 2002 in the Granite Butte area that involved a clearcut with leave trees for wildlife habitat improvement. Most past activities in whitebark pine stands involved slashing, yarding, or low intensity underburns.

Mining claims generally do not overlap with sensitive plants in this project, so direct, indirect or cumulative effects would not be expected.

The potential effects of grazing are discussed below.

Present and foreseeable future projects from Appendix D that are relevant for effects to R1 Sensitive plants:

- Alice Creek Wildlife Habitat Project: This decision would include using prescribed fire to enhance wildlife habitat on 1,500 acres on the Lincoln Ranger District. Whitebark pine and two Missoula phlox occurrences are within the project boundaries. Sensitive plant surveys were conducted and design criteria and continuing monitoring would protect sensitive plant populations. The determination for both species was that "individuals could be affected but impacts would not contribute to a trend toward federal listing or loss of viability."

- Blackfoot Winter Travel Plan: This decision determines what roads would be open to motorized traffic in the winter season. The decision would have minimal ground disturbance; no new routes would be established and no existing routes would be closed. There are known sensitive plant populations within the planning area. Design criteria and continuing monitoring would protect sensitive plant populations.
- Dalton Mountain Forest Restoration and Fuels Reduction Project: This project proposes commercial and non-commercial harvest, hand thinning and prescribed burning. Whitebark pine is the only sensitive plant species in the planning area. Design features would protect whitebark pine during implementation, and removal of competing shade-tolerant trees would benefit whitebark pine.
- Granite Butte Whitebark Pine Restoration Project: This project involves planting whitebark pine seedlings in a burned area. The project would benefit whitebark pine. Any other sensitive plants found within the planning area would be protected during implementation.
- Grazing Allotments: Several livestock grazing allotments have whitebark pine stands within the allotment boundary. It is likely that grazing has some effects, but likely minimal, on the whitebark pine or the plant community. Whitebark pine stands typically have sparse understory vegetation, so grazing pressure is probably limited in these areas. Three of the Missoula phlox occurrences in the planning area are within grazing allotments. The fourth occurrence is adjacent to but not within an allotment. There has been little research on Missoula phlox, but Mueggler (1980) studied the effects of grazing on other phlox species. He found that phlox tend to be poor to fair forage. He listed *Phlox hoodii* as an increaser with grazing, but found that the plant's response to grazing was highly variable, sometimes increasing and sometimes decreasing. A Montana National Heritage Program survey from 2009 ranks one Missoula phlox occurrence in a grazing allotment as AB, which indicates excellent or good viability. The 2002 survey by Barton and Crispin mentions weeds outside occurrences; the report does not mention effects of grazing, but might be expected to have if they were present.
- Helmville Face Wildlife Habitat Improvement Project: The project proposes hand thinning and prescribed burning to enhance wildlife habitat. No new roads would be constructed. No R1 sensitive plant species occur in the planning area and none would be affected by the project. If any populations are found at any time they would be protected from ground disturbance or herbicide application.
- Herbicide use is regulated by the Helena National Forest Noxious Weed Treatment Record of Decision. Its provisions protect sensitive plants.
- Hunting and Outfitter Guides: Hunting may occur in most areas of the Forest. The main potential impacts are from camping, especially larger, long-term camps and use of motorized vehicles to retrieve big game.
- Public Firewood Gathering: Approximately 14.3 miles of motorized routes are within 300 feet of whitebark pine under alternative 2 (approximately 4.98 miles for alternative 3 and 3.43 miles for alternative 4). Only dead trees may be cut. Since whitebark pine stands tend to occur at higher elevations in rather remote locations, it is not likely that stands would be favored for firewood gathering.
- Recreation Activities: Dispersed camping and trailheads occur in areas with whitebark pine. Potential effects are discussed in the two sections above on common effects as well as under Resource Indicator #1. Campgrounds and picnic areas, recreation residences,

and other recreation activity sites that could cause more disturbance do not overlap any sensitive plants.

- Roadside Hazard Vegetation Treatment: This project would treat approximately 9,614 acres with mechanical individual tree removal to minimize large-scale wildfire threat and improve public safety along roadways. Field surveys were completed on the treatment areas in 2009. Three populations of *Juncus hallii* were found in proposed units. Those populations would be protected from ground disturbing activities and herbicide application. *Juncus hallii* would not be affected by activities proposed in the Blackfoot Travel Plan.
- Routine Road Maintenance: Routine road maintenance typically does not occur far enough off roads to damage any sensitive plant occurrences.
- Stonewall Creek Restoration project: Stonewall Creek passes through whitebark pine. The restoration project may have short-term effects to individual whitebark pine trees, but would not be expected to have long-term effects to stands.
- Stonewall Vegetation Management Project: This project would treat approximately 8,500 acres with a combination of pre-commercial thinning, timber harvest and prescribed fire. Up to 5 miles of new temporary road would be built. Field surveys of the proposed units and temporary roads were completed in 2009. No sensitive plant populations were found during those surveys or previous surveys. Whitebark pine was added to the R1 Sensitive Species List in 2011. If any whitebark pine stands or other sensitive plant populations are found at any time they would be protected from ground disturbance or herbicide application.
- Telegraph Vegetation Project. This project would treat approximately 6,300 acres with a combination of pre-commercial thinning, timber harvest and prescribed fire. Up to 6 miles of new temporary road would be built. There are known populations of *Juncus hallii* in this planning area. Those populations have been identified and would be protected from ground disturbing activities and herbicide application.

Resource Indicator and Measure 1: Presence of sensitive plants near roads or trails

Implementing alternative 2 in combination with the effects of past, present and reasonably foreseeable future actions (appendix D) would result in potential increases in ground disturbance and incidental damage to Missoula phlox and whitebark pine because although each project minimizes effects to sensitive plants, incidental damage is possible. Direct and indirect effects of alternative 2 are expected to be few and of low intensity and magnitude because of project design features and resource protection measures; cumulative effects are also expected to be limited in intensity and magnitude.

Resource Indicator and Measure 2: Risk of invasive plant spread into sensitive plant occurrences

Most projects that involve ground disturbance have the potential to increase the risk of invasive plant spread if the species are present. Implementing alternative 2 in combination with the effects of past, present and reasonably foreseeable future actions (appendix D) would result in potential increases in weed cover in or near sensitive plant occurrences.

There are policies in place that reduce or eliminate impacts from management activities on sensitive species (USDA Forest Service 2005). Therefore, the effects expected from this alternative when combined with the effects from the other management activities past and future, are not expected to contribute to change in status or viability of sensitive plants. In addition, cumulative effects are not expected to contribute to an increase in current or predicted downward trends in population numbers or habitat capability that would reduce the existing distribution of any of the R1 sensitive plant species discussed in this analysis under this alternative.

Alternative 3

Direct and Indirect Effects

Alternative 3 provisions that would be different from the existing condition (alternative 1) and that could affect sensitive plants include: (1) implementation of resource protection provisions for vehicle use within 300 feet of roads or trails, (2) differences in the number of miles and permitted uses of routes in the vicinity of whitebark pine, and (3) the potential for spread of noxious weeds in the planning area where road and trail use changes are proposed, (4) permitted use changes for routes near Missoula phlox occurrences, and (5) changes to permitted uses on “trails of interest”.

Under alternative 3, there would be a small increase in the acres of Missoula phlox within 300 feet of non-motorized trails and a decrease in acres in proximity to motorized trails. For whitebark pine, a substantial increase in the proximity to non-motorized trails would occur but there would be substantial decrease in motorized route proximity (table 106).

Table 106. Proximity of roads and trails to Missoula phlox and whitebark pine under alternative 3

	Alternative 1 – Existing Condition		Alternative 3	
Species	Within 300 feet of Non-Motorized Trails	Within 300 feet of Motorized Trails	Within 300 feet of Non-Motorized Trails	Within 300 feet of Motorized Trails
Missoula phlox	18.8 acres	16.6 acres	20.5	14.8
Whitebark pine	0.8 miles	14.3 miles	10.8	4.98

Permitted use changes for routes near Missoula phlox occurrences

Resource Indicator 1: Presence of sensitive plants near roads or trails

Road and trail designations for two routes near Missoula phlox occurrences would change from NOMTR (non-motorized) for alternative 1 to NOMTR_FS (non-motorized, foot and stock only) for alternative 3 thereby reducing the types of uses near the Missoula phlox occurrences.

Vehicle use within 300 feet of motorized routes

Under alternative 3, wheeled motorized vehicle use would be allowed dispersed camping and parking associated with camping within 300 feet from the edge of designated motorized routes as long as:

- No new permanent routes are created by this activity
- No damage to existing vegetation, soil, or water resources occurs
- Travel off-route does not cross streams
- Travel off-route does not traverse riparian or wet areas
- Recreationalists will use the most direct route to disperse camp
- Recreationalists must select their site by non-motorized means

Parking safely next to the side of the road would also be allowed. Proposed monitoring would increase the chances of discovering any threats or disturbance to sensitive plant occurrences and would allow for site-specific management changes if needed.

For routes within 300 feet of Missoula phlox occurrences, two would be non-motorized and restricted to foot and stock use, and two would be open to highway legal vehicles (table 101). Approximately half the phlox occurrence (#32) adjacent to open, highway legal routes (440 and 1884) would be within 300 feet of the edge of the routes. The two routes pass through areas that are not forested and may not be conducive to dispersed camping. If vehicle use occurs in this area, it could cause ground disturbance and damage to Missoula phlox plants. The resource protection measures listed above would limit resource damage and allow for earlier detection of disturbance and management changes if needed.

Miles and designation of routes in the vicinity of whitebark pine

Under this alternative, there are 4.98 miles of motorized routes and 10.8 miles of non-motorized routes within 300 feet of whitebark pine stands. With fewer miles of motorized routes within 300 feet of whitebark pine stands, this alternative would have fewer effects to the sensitive plant. Under this alternative, motor vehicle use within 300 feet of roads and trails would be subject to resource protection measures including monitoring, so damage to whitebark pine stands is less likely than under the existing condition (alternative 1).

The uses permitted on routes within 300 feet of whitebark pine would change for approximately 37 route segments. One route would change from closed to open to highway legal vehicles. The remaining changes would result in decreased use through conversion to non-motorized use, decommissioning, or storage. These changes would result in less risk of disturbance to whitebark pine stands.

Management of “trails of interest”

Under alternative 3, “trails of interest” in the planning area (CDNST, Helmville-Gould, and Stonewall) would be managed somewhat differently than they are currently (see appendix G for a map of these trail corridors and the types of uses that would change under alternative 3 and a summary by trail section in appendix C).

The CDNST (trail 440) within the planning area would be managed primarily for non-motorized use; seasonal motorized use (closed 9/1-6/30) would be limited to approximately 1 mile of trail and the rest of the trail would be managed for non-motorized use. Flesher Pass to Stemple Pass would change from a motorcycles-only trail to a non-motorized trail and Stemple Pass to Marsh Creek would change from a motorized trail (open to vehicles 50 inches or less in width with no seasonal restrictions) to a non-motorized trail (over-snow vehicles allowed). Marsh Creek to Nevada Mountain would continue to have approximately 1 mile of motorized use. Approximately 4 miles of the CDNST would be located along a road.

The Helmville-Gould Trail (trail 467) would also be managed for non-motorized use; motorized use would be prohibited. This trail would be designated a non-motorized trail (over-snow vehicles allowed) from its intersection with the CDNST to Dalton Mountain (see map in appendix G). This trail is not within 300 feet of sensitive plant species, so trail use would not have impacts to sensitive plants.

The Stonewall Trail (trail 417) would continue to be designated as a motorized trail (open to vehicles 50 inches or less in width), but it would be closed to wheeled use from September 1 – June 30 (there are currently no seasonal restrictions on this trail, see map in Appendix G).

Over all changes proposed under alternative 3 would result in less motorized use on these trails and consequently, less risk of disturbance to sensitive plant occurrences.

Resource Indicator 2: Risk of invasive plant spread into sensitive plant occurrences

The risk of invasive plant spread is estimated by proximity of the invasive occurrence to the sensitive plant occurrence, the presence of a road or trail between the two occurrences, motorized or non-motorized status of the route, and the invasive potential of the weed species.

For alternative 3, the risk of invasive plant spread into Missoula phlox and whitebark pine occurrences would be the same as for alternative 1, with the exception described above for increased monitoring and resource protection where vehicles are used off road and the minor changes listed shown in bold in table 107. Resource protection provisions would help protect sensitive plants that occur within 300 feet of designated motorized routes.

Table 107. Risk of invasive plant spread to sensitive plant occurrences-alternative 3

Phlox occurrence # / Whitebark pine occurrence #[1]	Distance from invasive plant occurrence (invasive plant species)[2]	Risk of invasive plant spread[2]
8 / 51	466 feet (yellow toadflax) 500 feet (spotted knapweed) 565 feet (houndstongue)	MODERATE – Route 493 runs through the yellow toad flax occurrence and to the spotted knapweed and houndstonge occurrences.**493 is non-motorized, foot and stock only.** Route 440 does not pass through or lead to nearby weed occurrences.
29 / 48	773 feet (houndstongue)	LOW – Small parts of the occurrence are crossed by non-motorized trails, but no road or trail goes between the invasive plant occurrence and the phlox occurrence.
32 / 40	Immediately adjacent to large occurrence of spotted knapweed.	HIGH – The entire phlox occurrence is adjacent to a motorized route.
NA / 39	2418 feet from spotted knapweed and road	LOW – Route decommissioned under all alternatives.
NA / 46	Immediately adjacent to spotted knapweed and an occurrence extending into stand either side of road.	HIGH – Road would continue to be motorized with seasonal restrictions.
NA / 15	4273 feet from spotted knapweed	LOW – Route decommissioned under all alternatives.
NA / 53	Routes run through stand	HIGH – Spotted knapweed and musk thistle are adjacent to route throughout stand. Roads would be open to highway legal vehicles under all alternatives.
NA / 40	649 feet from one Canada thistle infestation and immediately adjacent to another	MODERATE – Even though Canada thistle is immediately adjacent, it requires moist conditions and may not spread into the whitebark pine stand. **One road would be put into storage under alternative 3.**
NA / 41	Two routes runs through stand.	MODERATE - HIGH – **The route with most of**

Phlox occurrence # / Whitebark pine occurrence #[1]	Distance from invasive plant occurrence (invasive plant species)[2]	Risk of invasive plant spread[2]
	Canada thistle along routes.	**the Canada thistle would be decommissioned.** Another route running through the infestation would remain motorized. A third is outside the infestation but nearby and would remain open to highway legal vehicles. Canada thistle would be most likely to spread if site conditions are moist.
NA / 57	Routes run through stand. Spotted knapweed alongside one.	HIGH – **Two routes would be decommissioned.** The route surrounded by spotted knapweed would remain motorized.
NA / 16	Route and Canada thistle are adjacent to the stand.	**MODERATE -- Route would be decommissioned**. Canada thistle may not spread if site conditions in stand are dry.

[1]The Missoula phlox ID # (SONUM) is from the Montana Natural Heritage database. The ID number for whitebark pine stands is the FID # from the Helena National Forest database.

[2]Distances are from Arcmap measurements and are approximate.

[3]Changes to the existing condition are in bold.

Effectiveness of Project Design Features

Proposed project design features would effectively protect any newly discovered and existing R1 Sensitive plant species from new road or trail construction, decommissioning or storage, road maintenance, and weed treatments.

Irreversible and Irretrievable Commitments

There should be no irreversible or irretrievable commitments as a result of implementing alternative 3. Alternative 3 has few miles of motorized use near sensitive species. Where motorized use is increased with changes to route designation, there would be added protection from the resource protection measures that would apply to wheeled motorized vehicle use within 300 feet of designated routes. Threats from the potential spread of non-native invasive plants into sensitive plant occurrences would be mitigated by project design features and treating the invasive plant occurrences.

One Missoula phlox occurrence (#32) and whitebark pine occurrences have potential to be disturbed by motorized vehicle use under this alternative. Motorized vehicle use could result in damage to sites if they are not protected from use. Project design features have been developed (chapter 2) to ensure that these known populations are protected from ground disturbance associated with road maintenance, herbicide use and road and trail construction, decommissioning or storage, and motorized vehicle within 300 feet from designated routes.

Implementation of alternative 3 would not likely result in damage of whitebark pine stands. Since it proposes reductions in motorized use within whitebark pine occurrences, alternative 3 has less potential than alternatives 1 or 2 to adversely affect whitebark pine.

Short-term Uses and Long-term Productivity

Road storage is used to refer to roads that are intended to be self-maintaining in a non-use status for up to 20 years, but remain on the National Forest System. This is accomplished through re-contouring or obliterating access points which may include rock or earth barriers, and may include the removal of culverts to restore watercourses to natural channels and floodplains. The remainder of the roadbed would remain intact so the road could be easily rebuilt for future use.

Decommissioning is a term used to refer to activities that result in the stabilization and restoration of unneeded roads to a more natural state (36 CFR 212.1) or, Activities that result in restoration of unneeded roads to a more natural state (FSM 7705, FSM 7734) (table 4).

Decommissioning would include construction of waterbars, outsloping, or selectively re-contouring, removal of culverts, restoration of watercourses, ripping 12-18 inches, seeding, fertilizing, treating noxious weeds, and scattering slash on slopes. These actions would involve localized ground disturbance, erosion and sedimentation in the short term (5 years). However, project design features (chapter 2) would be implemented for any new ground disturbing activities associated with storage and decommissioning. Implementing these features would ensure that short-term adverse impacts would be negligible to minor. Over the long term, storing and decommissioning roads would substantially reduce the areas open to motor vehicle use and these former roads.

Unavoidable Adverse Effects

Some adverse effects are likely from the spread of non-native invasive plants due to the disturbance resulting from implementation of alternative 3. For the most part, these effects would be short term and limited in magnitude and intensity due to implementation of project design features and other resource protection measures and treatment under the Forest weed treatment program.

Cumulative Effects

Please see alternative 2 for a list of past, present, and foreseeable projects and activities used in the analysis.

Resource Indicator 1: Presence of sensitive plants near roads or trails

Implementing alternative 3 in combination with the effects of past, present and reasonably foreseeable future actions (appendix D) would result in potential increases in ground disturbance and possible incidental damage to Missoula phlox and whitebark pine because, although each project minimizes effects to sensitive plants, incidental damage is possible. Direct and indirect effects of alternative 3 are expected to be few and of low intensity and magnitude because of resource protection measures and reductions in motorized use near sensitive plant occurrences; cumulative effects are also expected to be limited in intensity and magnitude.

Resource Indicator 2: Risk of invasive plant spread into sensitive plant occurrences

Most projects that involve ground disturbance have the potential to increase the risk of invasive plant spread if invasive species are present. Implementing alternative 3 in combination with the effects of past, present and reasonably foreseeable future actions (appendix D) would result in potential increases in weed cover in or near sensitive plant occurrences.

There are policies in place that reduce or eliminate impacts from management activities on sensitive species (USDA Forest Service 2005). Therefore, the effects expected from this alternative when combined with the effects from the other management activities past and future, are not expected to contribute to change in status or viability of sensitive plants. In addition, cumulative effects are not expected to contribute to an increase in current or predicted downward trends in population numbers or habitat capability that would reduce the existing distribution of any of the R1 Sensitive plant species discussed in this analysis under this alternative.

Alternative 4

Direct and Indirect Effects

Alternative 4 is the preferred alternative. Alternative 4 provisions that would be different from the existing condition (alternative 1) and that could affect sensitive plants include: (1) implementation of resource protection provisions for vehicle use within 300 feet of designated motorized routes, (2) differences in the number of miles and permitted uses of routes in the vicinity of whitebark pine, and (3) the potential for spread of noxious weeds in the planning area where road and trail permitted use changes are proposed, (4) changes in permitted uses for some routes within 300 feet of Missoula phlox occurrences, (5) changes to permitted uses on “trails of interest,” and (6) new construction of motorized and non-motorized routes near sensitive plant occurrences.

Under alternative 4, there would be a small increase in the acres of Missoula phlox within 300 feet of non-motorized trails and a small decrease in acres within 300 feet of motorized trails. For whitebark pine, a substantial increase in the proximity to non-motorized trails would occur but there would be a substantial decrease in motorized route proximity (table 108).

Table 108. Proximity of roads and trails to Missoula phlox and whitebark pine under alternative 3

	Alternative 1 – Existing Condition		Alternative 4	
Species	**Within 300 feet of Non-Motorized Trails**	**Within 300 feet of Motorized Trails**	**Within 300 feet of Non-Motorized Trails**	**Within 300 feet of Motorized Trails**
Missoula phlox	18.8 acres	16.6 acres	20.5	14.8
Whitebark pine	0.8 miles	14.3 miles	10.5	3.43

Permitted use changes for routes near Missoula phlox occurrences

Resource Indicator 1: Presence of sensitive plants near roads or trails

New route construction near sensitive plant species

There would be 1.5 miles of new motorized trail construction and 1.3 miles of new non-motorized trail construction within 300 feet of whitebark pine stands. The new non-motorized trail would also be within 300 feet of a Missoula phlox occurrence. The new non-motorized trail would substitute for a motorized trail currently within 300 feet of the Missoula phlox occurrence. There would be no new construction near any other sensitive plant species. Construction would remove existing vegetation and create temporary disturbance to vegetation to the sides of the new routes. Disturbed areas would be susceptible to invasions of non-native invasive species until they revegetate. Surveys for sensitive plants would be completed before construction and measures would be taken to protect any sensitive species found. The new motorized trail construction would occur along an existing route so the changes would be relatively minor, but would result in new opportunities for dispersed use within 300 feet of the trail.

Route designation changes near Missoula phlox occurrences

Known occurrences of Missoula phlox are within 300 feet of roads and trails. Designations for two routes near Missoula phlox occurrences would change from NOMTR (non-motorized) for alternative 1 to NOMTR-FS (non-motorized, foot and stock only) for alternative 4, thereby reducing the types of uses near the phlox occurrences.

Vehicle use within 300 feet of motorized routes

Under alternative 4, wheeled motorized vehicle use would be allowed up to 300 feet from the edge of designated motorized routes for the purposes of dispersed camping and parking associated with dispersed camping. The resource protection measures described in alternative 2 and 3 would apply to alternative 4. Proposed monitoring would increase the possibility of discovering any threats or disturbance to sensitive plant occurrences and would allow for site-specific management changes if needed.

Under alternative 4, wheeled motorized vehicle use for the purposes of dispersed camping and parking associated with camping would be allowed within 300 feet from designated routes as long as:

- ♦ No new permanent routes are created by this activity
- ♦ No damage to existing vegetation, soil, or water resources occurs
- ♦ Travel off-route does not cross streams
- ♦ Travel off-route does not traverse riparian or wet areas
- ♦ Recreationalists will use the most direct route to disperse camp
- ♦ Recreationalists must select their site by non-motorized means

Parking safely next to the side of the road would also be allowed. For routes within 300 feet of Missoula phlox occurrences, two would be non-motorized and restricted to foot and stock use, and two would be open to highway legal vehicles. Approximately half the phlox occurrence (#32) adjacent to the open, highway legal route (1884) would be within 300 feet of the edge of the route. The route passes through areas that are not forested and may not be conducive to dispersed camping, however, if vehicles are used, they could result in disturbance to the phlox.

Road 1884, which is open to highway legal vehicles, passes through a whitebark pine stand. Alternative 4 would increase the types of use within 300 feet of the road, but would also have provisions for resource protection.

Miles and designation of routes in the vicinity of whitebark pine

Under this alternative, there would be 3.43 miles of motorized routes and 10.5 miles of non-motorized routes within 300 feet of whitebark pine stands. With fewer miles of motorized routes within 300 feet of whitebark pine stands, this alternative would have fewer effects to the sensitive species. Under this alternative, motor vehicle use within 300 feet of roads and trails would be permitted for more activities than under the other alternatives, but use would be subject to the same resource protection measures, including monitoring, to minimize impacts to sensitive species and other resources.

The uses permitted on routes within 300 feet of whitebark pine would change for approximately 36 route segments. One route would change from closed to open to highway legal vehicles. The remaining changes would result in decreased use through conversion to non-motorized use, more restricted motorized use, decommissioning, or storage. These changes would result in less risk of disturbance to whitebark pine stands.

Management of "trails of interest"

Under alternative 4, "trails of interest" in the planning area (CDNST, Helmville-Gould, and Stonewall) would be managed as described below (see appendix G for a map of these trail corridors and the types of uses that would change under alternative, 4 and a summary by trail section in appendix C).

The CDNST (trail 440) within the planning area would be managed primarily for non-motorized use; approximately 3 miles of non-motorized trail would be reconstructed and approximately 1 mile of trail would be managed for seasonal motorized use (closed 10/15-6/30); less than 0.5 miles would be open to motorized use with no restrictions. Flesher Pass to Stemple Pass would change from a single-track motorized trail to a non-motorized trail. Stemple Pass to Marsh Creek would change from a motorized trail (open to vehicles 50 inches or less in width with no seasonal restrictions) to a non-motorized trail with some trail reconstruction. Marsh Creek to Nevada Mountain would continue to have approximately 1 mile of motorized use. Approximately 0.5 miles of the CDNST would be located along a road. The reconstructed non-motorized trail would be within a whitebark pine stand. It is likely that some whitebark trees would need to be removed, but numbers have not been estimated.

The Helmville-Gould Trail (trail 467) would continue to be managed for motorized use for vehicles 50 inches or less. Seasonal motorized use would be allowed from its intersection with the CDNST to Dalton Mountain. The trail would be closed to motorized use from October 15 - June 30 annually (see map in appendix G). The trail is not within 300 feet of sensitive plant species, so would not impact sensitive plants.

The Stonewall Trail (trail 417) would continue to be designated as a motorized trail. It would change from having no seasonal restrictions to being closed to wheeled use from October 15 – June 30 (see map in appendix G). Portions of the Stonewall Trail would be realigned and reconstructed. An estimated 375 whitebark pine trees (less than 1 percent of the whitebark in the contiguous stand) could be removed to construct new trail segments (Milburn 2013b). Approximately two hundred of the trees would be seed producing and, for that reason, particularly important to the whitebark population.

Over all the proposed changes would result in less motorized use on these trails, and consequently, less risk of disturbance to sensitive plant occurrences.

Resource Indicator 2: Risk of invasive plant spread into sensitive plant occurrences

The risk of invasive plant spread is estimated by proximity of the invasive occurrence to the sensitive plant occurrence, the presence of a road or trail between the two occurrences, motorized or non-motorized status of the route, and the invasive potential of the weed species.

For alternative 4, the risk of invasive plant spread into two Missoula phlox occurrences (#8 and #29) and whitebark pine would be the same as for alternative 1, with the exception described above for increased monitoring and resource protection where vehicles are used off road and minor changes shown in bold in table 109. Resource protection provisions would help protect sensitive plants that occur within 300 feet of designated motorized routes. For occurrence # 32 the risk of non-native plant infestation would remain high.

Table 109. Risk of invasive plant spread to sensitive plant occurrences-alternative 4[1]

Phlox occurrence # / Whitebark pine occurrence #[1]	Distance from invasive plant occurrence (invasive plant species)[2]	Risk of invasive plant spread[2]
8 / 51	466 feet (yellow toadflax) 500 feet (spotted knapweed) 565 feet (houndstongue)	MODERATE – Route 493 runs through the yellow toad flax occurrence and to the spotted knapweed and houndstongue occurrences.**493 is non-motorized, foot and stock only permitted.** Route 440 does not pass through or lead to nearby weed occurrences.
29 / 48	773 feet (houndstongue)	LOW – Small parts of the occurrence are crossed by non-motorized trails, but no road or trail goes between the invasive plant occurrence and the phlox occurrence.
32 / 40	Immediately adjacent to large occurrence of spotted knapweed.	HIGH – The entire phlox occurrence is adjacent to a motorized route.
NA / 39	2418 feet from spotted knapweed and road	LOW – Route decommissioned under all alternatives.
NA / 46	Immediately adjacent to spotted knapweed and an occurrence extending into stand either side of road	HIGH – Road would continue to be motorized with seasonal restrictions.
NA / 15	4273 feet from spotted knapweed	LOW – Route decommissioned under all alternatives.
NA / 53	Routes run through stand	HIGH – Spotted knapweed and musk thistle are adjacent to routes throughout stand. Routes would be open to highway legal vehicles under all alternatives
NA / 40	649 feet from one Canada thistle infestation and immediately adjacent to another	MODERATE – Even though Canada thistle is immediately adjacent, it requires moist conditions and may not spread into the whitebark pine stand. **One road would be decommissioned under alternative 4**
NA / 41	Two routes run through stand. Canada thistle along routes.	MODERATE - HIGH – **The route with most of the Canada thistle would be decommissioned.** Another route running through the infestation would remain motorized. A third is outside the infestation but nearby and would remain open to highway legal vehicles. Canada thistle would be most likely to spread if site conditions are moist.
NA / 57	Route runs through stand. Spotted knapweed alongside.	HIGH – Route is open to motorized use with seasonal restrictions. Spotted knapweed runs along length of route and may spread into the whitebark pine stand.
NA / 16	Route and Canada thistle are adjacent to the stand.	**MODERATE** -- **Route would be decommissioned**. Canada thistle may not spread if conditions in stand are dry.

[1]The Missoula phlox ID # (SONUM) is from the Montana Natural Heritage database. The ID number for whitebark pine stands is the FID # from the Helena National Forest database.

[2]Distances are from Arcmap measurements and are approximate.

[3]Changes from the existing condition are in bold.

Effectiveness of Project Design Features

Proposed project design features would effectively protect any newly discovered and existing R1 Sensitive plants from new road or trail construction, decommissioning or storage, road maintenance, and weed treatments.

Irreversible and Irretrievable Commitments

There should be no irreversible or irretrievable commitments as a result of implementing alternative 4. Alternative 4 has few miles of motorized use near sensitive plant species. Where motorized use is increased with new construction or changes to permitted uses of routes, there would be added protection from the resource protection measures that would be instituted within 300 feet of designated motorized routes. Threats from the potential spread of non-native invasive plants into sensitive plant occurrences would be mitigated by project design features and treating the invasive plant occurrences.

Short-term Uses and Long-term Productivity

Road storage is used to refer to roads that are intended to be self-maintaining in a non-use status for up to 20 years, but remain on the National Forest System. This is accomplished through re-contouring or obliterating access points which may include rock or earth barriers, and may include the removal of culverts to restore watercourses to natural channels and floodplains. The remainder of the roadbed would remain intact so the road could be easily rebuilt for future use.

Decommissioning is a term used to refer to activities that result in the stabilization and restoration of unneeded roads to a more natural state (36 CFR 212.1) or, Activities that result in restoration of unneeded roads to a more natural state (FSM 7705, FSM 7734). See Table 4.

Decommissioning would include construction of waterbars, outsloping, or selectively re-contouring, removal of culverts, restoration of watercourses, ripping 12-18 inches, seeding, fertilizing, treating noxious weeds, and scattering slash on slopes. These actions would involve localized ground disturbance, erosion and sedimentation in the short term (5 years). However, project design features (chapter 2) would be implemented for any new ground disturbing activities associated with storage and decommissioning. Implementing these features would ensure that short-term adverse impacts would be negligible to minor. Over the long term, storing and decommissioning roads would substantially reduce the areas open to motor vehicle use and these former roads.

Effects of new construction and road and trail maintenance would have similar short-term adverse effects and long-term benefits. New construction, decommissioning, and storage would be subject to project design features that require surveys for sensitive plants prior to implementation.

Unavoidable Adverse Effects

There would be potential for some adverse effects from new construction, including removal of white bark pine trees along the Stonewall and Continental Divide trails and spread of non-native invasive plants due to disturbance resulting from implementation of alternative 4. For the most part, these effects would be short term and limited in magnitude and intensity due to the implementation of project design features and other resource protection measures.

Cumulative Effects

Please see the cumulative effects section under alternative 2 for descriptions of projects analyzed for cumulative effects and of the potential cumulative effects associated with this project.

Resource Indicator and Measure 1: Presence of sensitive plants near roads or trails

Implementing alternative 4 in combination with the effects of past, present and reasonably foreseeable future actions (appendix D) would result in potential increases in ground disturbance and incidental damage to Missoula phlox and whitebark pine because although each project minimizes effects to sensitive plants, incidental damage is possible. Direct and indirect effects of alternative 4 are expected to be few and of low intensity and magnitude because of project design features and resource protection measures; cumulative effects are also expected to be limited in intensity and magnitude.

Resource Indicator and Measure 2: Risk of invasive plant spread into sensitive plant occurrences

Most projects that involve ground disturbance have the potential to increase the risk of invasive plant spread if weeds are present. Implementing alternative 4 in combination with the effects of past, present and reasonably foreseeable future actions (appendix D) would result in potential increases in weed cover in or near sensitive plant occurrences.

There are policies in place that reduce or eliminate impacts from management activities on sensitive species (USDA Forest Service 2005). Therefore, the effects expected from this alternative when combined with the effects from the other management activities past and future, are not expected to contribute to change in status or viability of sensitive plants. In addition, cumulative effects are not expected to contribute to an increase in current or predicted downward trends in population numbers or habitat capability that would reduce the existing distribution of any of the R1 sensitive plant species discussed in this analysis under this alternative.

Compliance with Forest Plan and Other Relevant Laws, Regulations, Policies and Plans

All alternatives are consistent with Regional direction, Forest Plan Standards and Guidelines and the Endangered Species Act. Loss of individuals or habitat would not be considered significant because: (1) Proposed actions would not contributing to a trend toward federal listing for any species; (2) The project would not result in a significantly increased risk of loss of viability to a species; or, (3) The project would not result in a significantly increased risk of loss of viability to a significant population (stock). If any other threatened, endangered, or sensitive species are found, they will be protected as appropriate.

Conclusions

Five R1 Sensitive plant species occur in the planning area, but three of them do not occur near roads or trails. Two species, Missoula phlox and whitebark pine, occur within 300 feet of roads and trails. Three hundred feet was chosen as the distance to be used to analyze direct and indirect effects to sensitive plant species because it is the distance where off-road vehicle use would be permitted on designated motorized routes and where most impacts from proposed activities would be expected to occur. In general, motorized uses are considered to have greater potential effects on the landscape, primarily due to (1) the accessibility of motorized routes, (2) the ability of vehicles to travel great distances, allowing visitors to access more terrain in a shorter time, including remote locations, and (3) the higher ground pressures and greater torque applied to soil and vegetation surfaces (Olive and Marion 2009).

Resource Indicator 1: Presence of sensitive plants near roads or trails

Table 110. Proximity of roads and trails to Missoula phlox and whitebark pine under all alternatives

Indicator	Alternative 1 – Existing Condition		Alternative 2		Alternative 3		Alternative 4	
Presence near roads and trails	Within 300 feet of Non-Motorized Trails	Within 300 feet of Motorized Trails	Within 300 feet of Non-Motorized Trails	Within 300 feet of Motorized Trails	Within 300 feet of Non-Motorized Trails	Within 300 feet of Motorized Trails	Within 300 feet of Non-Motorized Trails	Within 300 feet of Motorized Trails
Missoula phlox	18.8 acres	16.6 acres	18.8	16,5	20.5	14.8	20.5	14.8
Whitebark Pine	0.8 miles	14.3 miles	8.9	14.3	10.8	4.98	10.5	3.43

Under alternatives 1 and 2 there would be more acres of Missoula phlox within 300 feet of motorized routes (table 110). Alternatives 3 and 4 would have more acres of Missoula phlox near non-motorized routes and fewer near motorized routes. The difference in acres between alternatives is small (table 110).

Only alternative 4 proposes new construction near sensitive plant occurrences. Under alternative 4, approximately 1.7 acres of Missoula phlox would be within 300 feet of new construction of a non-motorized trail. The new trail would also pass through a whitebark pine stand (#40). New construction would create ground disturbance which would be far enough away from the phlox occurrence (#32) that there would be no direct effects to the sensitive plant. The disturbed ground, however, would be suitable for the establishment of non-native invasive plants which could compete with the sensitive plant if they spread into the occurrence. Whitebark pine trees would likely be removed for construction of the trail. Approximately 375 whitebark pine trees may need to be removed for reconstruction of the Stonewall Trail. Project design features have been developed to ensure adverse impacts are minimized (chapter 2).

Alternatives 3 and 4 propose more route decommissioning and storage than alternatives 1 and 2. Decommissioning and storage would include ground disturbance that would have short-term adverse effects, but would have long-term beneficial effects.

Vehicle use within 300 feet of motorized routes

Under all alternatives, wheeled motorized vehicle use would be allowed up to 300 feet from the edge of designated motorized routes for the purposes of dispersed camping and parking associated with dispersed camping. Alternatives 2, 3, and 4 would include provisions to protect resources. Vehicle use would be allowed, as described above, as long as:

- No new permanent routes are created by this activity
- No damage to existing vegetation, soil, or water resources occurs
- Travel off-route does not cross streams
- Travel off-route does not traverse riparian or wet areas
- Recreationalists will use the most direct route to disperse camp
- Recreationalists must select their site by non-motorized means

Parking safely next to the side of the road would also be allowed. The Missoula phlox occurrence (#32) south of Granite Butte would be the most vulnerable to off-road use since it occurs adjacent to a motorized route (1884). Motorized vehicle use would be allowed into approximately half the occurrence under all alternatives. Potential disturbance would be greatest under alternative 1 since it does not include the resource protection measures included in the other alternatives.

Miles and designation of routes in the vicinity of whitebark pine

Table 110 shows miles of routes within 300 feet of whitebark pine stands. Alternative 2 proposes the most miles of open roads and trails within 300 feet of whitebark pine. The total mileage under the other alternatives is similar; the mileage of motorized routes is greater under alternatives 1 and 2.

Alternatives proposing more miles and more motorized miles near whitebark pine would be expected to have greater risk of impacts to whitebark pine. Greater density of routes, especially motorized routes, increases the possibility of recreationists reaching the somewhat remote areas where whitebark pine occurs, and increases the amount of dust, habitat fragmentation, soil compaction, and erosion. Motorized use increases the potential for ground disturbance and direct effects to whitebark pine trees. Whitebark pine in the planning area makes up a small proportion of the whitebark on the Helena National Forest (less than 1 percent).

Serious damage to whitebark stands has not been observed to date (Milburn personal communication 2013), so it is unlikely that damage from any alternative would be intense or widespread. With fewer miles of motorized routes proposed near or through whitebark pine, alternatives 3 and 4 would be expected to result in less disturbance to whitebark pine.

Management of “trails of interest”

Under alternatives 1 and 2 these trails would be managed primarily for motorized use. Alternatives 3 and 4 would change some motorized uses to non-motorized and add some seasonal restrictions.

For the CDNST, alternatives 3 and 4 propose primarily non-motorized use with seasonal restrictions for areas open to motorized use. Motorized portions of the trail would be closed for longer under alternative 3 (9/1-6/30) than under alternative 4 (10/15-6/30). Trail reconstruction under alternative 4 could involve removal of some whitebark pine. The number of trees that would be removed has not been estimated.

The Helmville-Gould Trail does not occur within 300 feet of mapped sensitive plants, so no effects to sensitive plants would be expected under any alternative.

The Stonewall Trail would be managed for motorized use under all alternatives, but would have seasonal restrictions under alternative 3 (9/1-6/30) and alternative 4 (10/15-6/30). Under alternative 4, whitebark pine would be removed to construct new segments of the trail.

With less motorized use, alternatives 3 and 4 would be expected to have fewer effects on sensitive plants along the CDNST and the Stonewall Trail. Since the trails would not be reconstructed, alternative 3 would not include the loss of whitebark pine trees or other effects from construction disturbance.

Resource Indicator 2: Risk of non-native invasive plant spread into sensitive plant occurrences

In the planning area, three Missoula phlox occurrences are within one-half mile of weed infestations. Whitebark pine overlaps or is adjacent to weed infestations. There is little information available concerning the effects of weeds on whitebark pine. Since it is a tree, it would seem less vulnerable to effects by herbaceous weedy plants. Weeds could affect the understory or plant communities of the stands if they do not affect the whitebark pines directly. The risk of non-native invasive plant establishment and spread would be greater in areas with more roads and trails, particularly those designated for motorized use.

In this analysis, the risk of invasive plant spread is estimated by the proximity of the invasive occurrence to the sensitive plant occurrence, the presence of a road or trail between the two occurrences, motorized or non-motorized status of the route, and the invasive potential of the weed species.

For alternatives 2, 3, and 4 the risk of invasive plant spread into Missoula phlox and whitebark pine occurrences would be the same as for alternative 1, with the exception of increased monitoring and resource protection where vehicles are used off road and the minor changes noted in bold (as shown in the previous tables). Resource protection provisions would help protect sensitive plants that occur within 300 feet of designated motorized routes.

Summary of Determinations for TES Plant Species

The following determinations apply to alternatives 2, 3 and 4 and assume compliance with project design features.

Scalloped Moonwort

Direct, Indirect, and Cumulative Effects of Proposed Actions

This species is known from the Beaverhead-Deerlodge Forest, immediately adjacent to the Helena National Forest. This species is associated with wetland habitats. This species has not been found to-date in field surveys of the planning area. If the species is found in the planning area, it would be protected by project design features.

Determination

For all alternatives, the species is not likely to occur in the planning area, but since potential habitat does occur; its presence cannot be completely ruled out. Proposed activities under all alternatives “may impact individuals but would not contribute to a trend toward federal listing or loss of viability” because project design features would protect any plants discovered in the planning area.

Peculiar Moonwort

Direct, Indirect, and Cumulative Effects of Proposed Actions

Peculiar moonwort is not known from the planning area. The habitat for this species on the Helena National Forest is open grassland and open grassland/sagebrush. If the species is found in the planning area, it would be protected by project design features.

Determination

For all alternatives, the species is not likely to occur in the planning area, but since potential habitat does occur; its presence cannot be completely ruled out. Proposed actions under all alternatives “may impact individuals but would not contribute to a trend toward federal listing or loss of viability” because project design criteria described would protect any plants discovered in the planning area.

Lesser Yellow Lady’s Slipper

Direct, Indirect, and Cumulative Effects of Proposed Actions

This species has not been found on the Helena National Forest to date. The species occurs in fens, which are limited in extent on the forest. The habitat also includes damp mossy woods, seepage areas, and moist forest-meadow ecotones in valleys and lower elevations in the mountains. These habitats would be protected by design features that limit ground disturbance in wet habitats.

Determination

For all alternatives, the species is not likely to occur in the planning area, but since potential habitat does occur; its presence cannot be completely ruled out. Proposed actions under all alternatives "may impact individuals but would not contribute to a trend toward federal listing or loss of viability" because project design criteria would protect any plants discovered in the planning area.

English sundew

Direct, Indirect, and Cumulative Effects of Proposed Actions

This species occurs in the Indian Meadows Research Natural Area. Known occurrences do not occur within 100 feet of roads or trails and would not be affected by this project.

Determination

Proposed actions under all alternatives "may impact individuals but would not contribute to a trend toward federal listing or loss of viability" because plants do not occur near roads or trails.

Slenderleaf Sundew

Direct, Indirect, and Cumulative Effects of Proposed Actions

This species occurs in the Indian Meadows Research Natural Area. Known occurrences do not occur within 100 feet of roads or trails and would not be affected by this project.

Determination

Proposed actions under all alternatives "may impact individuals but would not contribute to a trend toward federal listing or loss of viability" because plants do not occur near roads or trails.

Howell's Gumweed

Direct, Indirect, and Cumulative Effects of Proposed Actions

This species is not known to occur in the planning area. If any occurrences are found in the future, they would be protected by project design features.

Determination

For all alternatives, the species is not likely to occur in the planning area, but since potential habitat does occur; its presence cannot be completely ruled out. Proposed actions under all alternatives "may impact individuals but would not contribute to a trend toward federal listing or loss of viability" because project design criteria would protect any plants discovered in the planning area.

Hall's Rush

Direct, Indirect, and Cumulative Effects of Proposed Actions

This species is not known to occur in the planning area. If any occurrences are found in the future, it would be protected by project design features.

Determination

For all alternatives, the species is not likely to occur in the planning area, but since potential habitat does occur; its presence cannot be completely ruled out. Proposed actions under all alternatives "may impact individuals but would not contribute to a trend toward federal listing or loss of viability" because project design criteria would protect any plants discovered in the planning area.

Missoula Phlox

Direct, Indirect, and Cumulative Effects of Proposed Actions

This species is known from three locations within 300 feet of routes in the Blackfoot travel planning area.

Determination

Proposed actions under all alternatives "may impact individuals but would not contribute to a trend toward federal listing or loss of viability" because project design criteria and resource protection measures would protect plant occurrences.

Swaying Bulrush

Direct, Indirect, and Cumulative Effects of Proposed Actions

This species is known from the Indian Meadows RNA in the northern portion of the Forest in true fens and does not occur within 300 feet of roads or trails.

Determination

Proposed actions under all alternatives "may impact individuals but would not contribute to a trend toward federal listing or loss of viability" because the species does not occur near roads or trails in the planning area.

Whitebark pine

Direct, Indirect, and Cumulative Effects of Proposed Actions

Whitebark pine is usually found at the alpine timberline or with other high-mountain conifers just below the timberline. A number of whitebark pine stands are intersected by or adjacent to roads or trails under all alternatives.

Determination

Proposed actions under all alternatives "may impact individuals but would not contribute to a trend toward federal listing or loss of viability" because project design criteria and resource protection measures would protect plant occurrences in the planning area.

For more details on compliance with the Forest Plan, see appendix A, and for more details on compliance with other regulations and policy, see the Botany Report and Biological Evaluation for Plants (Carsey 2014) in the project record.

Soils

Affected Environment

The Blackfoot travel planning area is underlain by metasedimentary rocks and intruded granitic rocks. The Continental Divide is the most prominent feature in the planning area, trending northeast to southwest at elevations ranging from 6,300 to 7,581 feet. The local relief is between 1,000 and 2,000 feet. The area is mountainous except for the Lincoln valley, which is a relatively flat, gravel-covered surface at an elevation of 4,600 feet.

Geology

The mountain ranges in the analysis area were formed by folded and faulted metasedimentary rocks and limestone. There are exposures of Boulder Batholith granitic, basaltic, and rhyolitic rocks in the western part of the planning area. The granitic rocks were intruded into pre-existing limestone and metasedimentary rocks. The basaltic and rhyolitic rocks were extruded and covered granitic or metasedimentary rocks. There are moderately extensive deposits of glacial till, colluvium, and alluvium in the larger valleys. There are minor surface deposits of loess that have been influenced by volcanic ash in the northern part of the survey area. These deposits originated with the eruption of Mt. Mazama in Oregon approximately 6,700 years ago.

The landforms in the survey area have been formed by erosion and by deposition of both water and ice. Glaciers have affected parts of the area, giving a unique character to the landforms. U-shaped valleys, cirques, steep-sided mountain peaks, and rolling glacial moraines are common. In other areas, stream erosion has produced V-shaped mountain valleys, terraces, and flood plains. The shapes of some landforms are influenced by the structure of the bedrock. The bedding and hardness of the bedrock and the orientation of the beds affect the location of stream channels and the gradient and shape of slopes. Landslides are found in areas where some of the layers of bedrock are soft. They can produce large areas of landslide deposits that are irregular in shape. Stream bottoms are along major perennial streams. They include flood plains, low terraces, and alluvial fans. They are gently sloping. Soils on stream bottoms can have a water table and are usually subject to flooding. Terraces are relatively flat surfaces bordering a valley floor. They represent the former position of an alluvial plain or lake bottom and can include steep risers between terrace surfaces and valley floors. They are formed by alluvial, glacial outwash, and lacustrine deposits. Alluvial fans are formed by stream deposition in areas where channel gradients rapidly decrease. They are in areas where a stream emerges from a narrow mountain valley onto a broader valley bottom or plain. They are smooth, convex, fan-shaped deposits. Their apex is at the mouth of the stream. Alluvial fans are dissected by poorly defined, intermittent streams 1,000 to 5,000 feet apart. The drainage system has braided channels with moderate gradients. Alluvial fans have no major changes in slope aspect.

Soils

There are many relationships between parent geology and the properties of soils. Relationships between soil properties and geologic origin of parent material have been observed and used to map the distribution of soils in the planning area. Relationships between geologic origin of parent material and the performance of materials on road cutbanks, in roadfills, and as native road surfaces have been used to identify limitations to these uses and listed in the 2001 Helena National Forest Soil Survey. Metasedimentary rocks are argillite, quartzite, siltite, and siliceous limestone of the Precambrian Age Belt Supergroup. Soils formed in these materials are subject to a slight hazard of erosion. Included in this group are small areas of sandstone and shale. Parent material derived from shale has higher clay content than parent materials derived from other rocks.

Granitic rocks are granite, granodiorite, and diorite. This bedrock group weathers to produce moderately coarse-textured and coarse-textured parent materials. Soils formed in these parent materials are generally subject to a severe hazard of erosion and are scattered throughout the planning area. Volcanic ash-cap and loess soils are common in the planning area, and these are sensitive to compaction and have a moderate to high erosion hazard depending on landform. Soils in the Blackfoot planning area are commonly also found associated with glacial moraines, landslide deposits, or deposits of alluvial material. Soils and sub-soils generally have high rock fragment content, with sandy or loamy surface soils, sometimes with minor amounts of clay. Soils are grouped into landtypes with soils derived from similar parent material, topography, soil patterns, and climate. Typically, a landtype map unit consists of three or four major soils and some minor soils. Landtypes can be used to compare the soil suitability of large areas for common land uses. Within the Blackfoot travel planning area, there are 49 landtypes affected by roads and trails.

Sensitive soils are found on 24 landtypes. These determinations are based upon the “Soil Survey of Helena National Forest Area, Montana,” (USDA Forest Service 2001, Natural Resource Conservation Service 2001.) Sensitive soils are categorized into these landtypes:

- Landslide and slump prone landtypes
- Wet soil and flood prone landtypes
- Loess with volcanic ash landtypes
- Granitic landtypes

Areas with sensitive soils are more vulnerable to adverse soil impacts such as displacement, compaction, erosion and subsequent loss of soil productivity. The presence of sensitive soils in certain areas may pose a higher risk of adverse impacts. Soils are grouped into landtypes with soils derived from similar parent material, topography, soil patterns, and climate. Typically, a landtype map unit consists of three or four major soils and some minor soils. Landtypes can be used to compare the soil suitability of large areas for common land uses. Impacts on sensitive soils within landtypes (table 111) are selected as indicators because they represent areas most vulnerable to watershed impacts from roads or trails. When soil is compacted on roads and trails, or exposed on oversteepened cut and fill slopes, it can accelerate erosion and result in sediment delivery to sensitive soils on hillslopes and streams.

Table 111 displays the sensitive landtypes on the Helena National Forest. While there are only 4 primary sensitive soil types according to the Forest Soil Inventory, these 4 types are broken out in a bit more detail. The following 24 landtypes are designated as sensitive soils within the Blackfoot planning area: 120, 12A, 13A, 14B, 14C, 15, 15C, 30, 36B, 49B, 56, 58, 59, 59A, 59B, 76, 76A, 75, 90, 100, 101, 360, 790, 791.

Table 111. Sensitive soil landtypes broken out by geological hazard

Soil Geologic Hazards[1] (from Helena National Forest Soil Inventory)	“Sensitive” Landtypes
Landslide Map Units: Landslide-prone and wet soils	100, 101, 12A, 13A, 14B, 14C, 15, 15C, 790, 791
Colluvial Map Units: Slump-prone and wet soils	14B, 14C

Soil Geologic Hazards[1] (from Helena National Forest Soil Inventory)	**"Sensitive" Landtypes**
Wet Soil Map Units	12A, 13A, 14, 14B, 14C, 15, 15C, 36B, 100, 101,
Loess w/ Volcanic Ash Map Units: Vulnerable to compaction & Highly erodible soils	49B, 56, 58, 59, 59A, 59B, 76, 76A, 77, 77B, 79, 790, 791, 90
Granitic Map Units: Highly erodible soils	36, 36D, 36B, 56, 76, 76A, 120, 260, 360
Flood Plains & Terrace Map Units: Flood-prone areas and wet soils	100, 101
Alluvial Fan MU: Flood-prone areas	110

[1]The 4 primary sensitive soil types according to the Forest Soil Inventory (landslide and slump prone; wet soil and floodprone; loess with volcanic ash; granitic), these 4 types are broken out in a bit more detail in this table

When combining landslide/slump prone, wet/flood prone, granitic and volcanic ash soils, there are currently about 224 total miles of routes open to wheeled motorized use on sensitive soils within the planning area.

Environmental Consequences

Methodology

Assumptions

All roads on lands of other ownerships and not in the National Forest System were not considered in this analysis. Actions common to all alternatives that affect soils are described in chapter 2. For instance, it is assumed that roads would be stored at the 3s level and roads that are decommissioned would be done at the 4 level.

Project activities involve management of existing roads, and involve some new ground disturbance resulting from construction of new roads and trails. Action alternatives propose several acres of ground disturbing activities for this project.

The magnitude and extent of soil impacts are generally greatest on roads compared to non-motorized trails, because cut and fill road construction frequently results in soil disturbance on areas adjacent to the road tread. The magnitude and extent of soil impacts resulting from both construction and use of roads, motorized trails and non-motorized trails decrease in that order. Motorized trails typically require cut and fill construction on steeper slopes resulting in a trail prism more narrow than a road but wider than a non-motorized trail.

Other than roads and trails over sensitive soils (typically riparian areas), areas most prone to extensive soil degradation would include routes that run parallel to the slope and complex networks or "spaghetti" road patterns.

Information Used

This analysis was conducted based on field notes and personal observations from site visits in 2010, 2011 and 2012; professional interpretations of landtypes described in the most current soil survey of the Helena National Forest, Montana (USDA Forest Service 2001, Natural Resource Conservation Service 2001), and GIS queries by landtype.

Data Analysis

The data used for the analysis is the best available data with regards to accuracy of route location, soil type and associated soil properties. Open roads proposed on sensitive soils was the main metric for estimating effects from roads on soils in the Blackfoot travel planning area. The road and trail layer was overlain with the soil landtypes designated as “sensitive” for a GIS product displaying the miles of roads and trails occurring on specific designated sensitive landtypes. Sensitive landtypes were grouped into four categories of geologic hazard as identified in the Soil Survey of the Helena National Forest Area, 2001. These hazards address soils that occur in positions identified as; Landslide/Slump prone, Wet/Flood prone areas, Granitic soils and soils with Volcanic Ash surfaces. From this information, all routes were stratified based on these geologic hazards and then further divided by Open or Closed travel restriction.

For the Soil Resource analysis, all routes on Forest Service managed lands from each soil hazard were grouped into open or closed travel restriction. For those travel restrictions that allow **any** wheeled motorized travel at any time of year, they were placed into the Open category. The closed category was applied to those routes that are closed to **all** wheeled motorized travel yearlong and includes yearlong motorized closures, decommissioned roads and naturally reclaimed roads. For open roads open to wheeled, motorized use open yearlong or for part of the year, it is assumed the potential to perform decommissioning or soil reclamation would not be possible.

Cumulative Effects

Spatial and Temporal Context

The scale of analysis for direct, indirect and cumulative effects was the boundary of the Blackfoot travel planning area. The temporal boundary for soil recovery can be hundreds of years due to the gradual nature of soil recovery from disturbance.

Past, Present, and Reasonably Foreseeable Future Actions

The list of past, present and foreseeable actions noted in appendix D of this document was used for this analysis.

Measurement Indicators

Measures used to compare the effects of the alternatives on soils are:

- Miles of motorized routes on sensitive soils
- Amount of road decommissioning

Miles of routes open to motorized use on sensitive soils is a good measure of potential effects to soils. The potential for more than negligible to minor short-term impacts to soils from non-motorized trail construction and use (by hikers and mountain bikers) are low compared to motorized uses. For this reason, these activities were not chosen as measures of impacts. Road impacts on sensitive soil landtypes are selected as resource indicators because they represent areas most vulnerable to watershed impacts from roads or trails. Road decommissioning amounts and acreages are a good measure for comparing alternatives because decommissioning would encourage eventual recovery of soil productivity through natural site recovery.

Motorized routes have a much higher risk of impacts to adjacent soils and overall watershed impacts than non-motorized routes. Dispersed camping or other uses may be allowed for some distance off existing motorized routes. Where cross country travel is allowed for various uses off existing roads, impacts from motorized cross-country travel off existing or proposed routes are generally more severe in sensitive soil landtypes. Therefore, miles of motorized routes on sensitive soils are a good indicator of soil impacts.

Effects Common to All Alternatives

The effects of roads and trails on soils include: removal of vegetative cover, loss of soil productivity, compaction, degradation of soil structure, decreased infiltration and water holding capacity, reduction in organic material, accelerated surface erosion and exacerbation of mass failure risks, such as the risks of landslides or slumps. These types of soil impacts can occur on the prism (including cut and fill slopes) of all motorized use or non-motorized use roads and trails. These effects are more likely and common on open routes rather than closed routes, but can happen on both.

The magnitude and extent of soil impacts are generally greater on roads compared to trails, because cut-and-fill road construction often causes soil disturbance on areas adjacent to the road tread. On forest roads, the road tread is typically about 12-15 feet wide. For roads on steep slopes, the total area of soil disturbance, including cut-and-fill slopes, can be twice the width of the road tread itself. The average width of total soil disturbance associated with roads in the planning area is estimated to be approximately 30 feet. This is likely an overestimate for roads on flat ground, but more accurately reflects width of disturbance for roads on steep ground.

The magnitude and extent of soil impacts are generally less on trails designed for non-motorized uses such as foot, horseback, and mountain bike travel compared to roads and motorized-use trails, because construction of non-motorized trails does not require large cut-and-fill slopes. The trail tread for non-motorized trails is usually designed to be 2 feet wide. Non-motorized trails affect a relatively narrow corridor, typically no more than 6 feet wide, for the total area of soil disturbance. As a result, mountain bike use, hiking and horses have relatively low potential for soil impacts relative to motorized uses. Impacts of these activities can result in soil compaction and loss, reduced soil moisture, loss of organic litter, loss of ground cover vegetation, loss of native plant species, introduction of weeds and pathogens, and change in vegetation composition. Studies in Montana have found that mountain bikes have the lowest potential for erosion of the three activities (Wilson and Seney, 1994).

Trails designed for motorized use are typically intermediate in magnitude and extent of soil impacts, compared to roads and non-motorized-use trails. The trail tread is usually designed to be 5 feet wide. Motorized trail design generally requires moderate cut-and-fill construction.

The exact width of total soil disturbance associated with each motorized trail in the planning area has not been measured in the field. However for the purposes of this travel planning environmental analysis, the average width of soil disturbance associated with motorized trails is approximated as 15 feet, including ground disturbance on cut-and-fill slopes. This is likely an overestimate for trails on flat ground, but more accurately reflects the actual width of motorized trails on steep ground.

Impact on Soils from Off-Route Activity

For the Helena NF, cross-country (off-route) motorized travel has been prohibited since 2001and this would continue with implementation of any of the alternatives. The 2001 Tri-State OHV Decision did, however, provide a provision for motorized use within 300 feet of a road or trail for the purpose of dispersed camping. Alternative 1 would continue to implement this decision allowing motorized use within 300 feet from the edge of roads and trails for the purposes of dispersed camping. Transportation uses can indirectly impact soil productivity on lands outside the road or trail prism when travelers establish new routes, especially to avoid trail obstructions and crossing difficult terrain or wet areas. Under alternatives 2, 3 and 4, wheeled motorized vehicle travel would be allowed for the purposes of dispersed camping (and parking associated with camping) within 300 feet of designated system routes, including roads and trails, as long as 4 provisions are met that minimize resource damage, including ensuring that damage to soils is not observed (see chapter 2 for more details). According to Helena National Forest Soil Scientist David Marr, most sites currently used for dispersed camping are established and part of the existing condition in these areas (Marr 2013).

However, soil displacement, compaction, sedimentation, or loss of productivity could occur from this off- route travel in areas of sensitive soils. Transportation uses can indirectly impact soil productivity on lands outside the road or trail prism when travelers establish new routes, especially to avoid trail obstructions and to cross difficult terrain or wet areas. These routes are assumed to be the most detrimental to soil conditions because they would be developed without any erosion prevention measures. Also, this activity can result in soil quality degradation on areas that are identified for other types of uses in the Forest Plan, such as timber or forage production, and provisions for wildlife or fisheries habitat. The potential for misuse of these areas and development of new routes connecting areas, particularly in accessible valley bottoms, is a concern for soils. However, it is important to identify that there are several authorities to temporarily or permanently remove a site or area from use should resource concerns be identified.

Under alternatives 2, 3 or 4, wheeled motorized use within 300 feet of the edge of designated system routes would be allowed for dispersed camping and parking associated with dispersed camping as long as (1) no new permanent routes are created, (2) no damage to existing vegetation, soil or water resource occurs, (3) travel off-route does not cross streams, and (4) travel off-route does not traverse riparian or wet areas. This analysis assumes that these provisions would be implemented and if resource impacts are observed, motorized off-route use in this zone would be prohibited. Over 60 miles of unclassified routes have been identified in the planning area. Unclassified routes are not included as part of the Forest Transportation System and result in adverse impacts to soils because they occur on all soil types and are not designed or engineered to minimize erosion or avoid sensitive areas.

Alternative Comparisons

Table 112 shows the major differences between alternatives for sensitive soil areas, and for proposed new travel routes and decommissioned roads.

Table 112. Comparisons of miles of open and closed motorized routes on sensitive soils, and acres of new and decommissioned travel routes by alternative

Description of Action	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Miles of open routes on sensitive soils	**224**	**222**	**165**	**160**
Landslide/slump prone	30	29	26	25
Wet/flood prone	22	24	20	18
Granitic	18	18	12	12
Volcanic ash	154	151	107	105
Acres of ground disturbance resulting from	0	5	8	10

Description of Action	Alternative 1	Alternative 2	Alternative 3	Alternative 4
construction of new roads and trails				
Miles of road decommissioning*	0	8	200	212
Acres of ground disturbance that would result from road decommissioning	0	12	284	331

*- effectiveness of soil rehabilitation of decommissioned roads is dependent on type of rehabilitation implemented. Roads would be decommissioned at the 4-level.

Effects Common to All Action Alternatives

The effects common to alternatives 2, 3 and 4 include a net reduction in the number of miles of routes open to wheeled motorized use on sensitive soils, resulting in a beneficial effect to soils. A reduction in open routes on sensitive soils would reduce the risk in these areas of soil productivity loss, compaction, degradation of soil structure, decreased infiltration and water holding capacity, reduction in organic material, accelerated surface erosion, and exacerbation of mass failure risks, such as the risks of landslides or slumps.

Effects of non-motorized trails proposed in the action alternatives, compared to motorized trails, would result in a much lower risk of extensive losses of soil productivity due to narrower tread widths and less surface disturbance. They would create less area with soil compaction that could lead to surface erosion. Further, BMPs and design features would be applied to non-motorized trails to reduce erosion potential. Overall, the effects of non-motorized trails would be much smaller compared to the same mileage of motorized trails.

Alternatives 2, 3 and 4 would close, store or decommission some of the existing 60 miles of unclassified routes in the planning area. This closure would benefit the soils resource and facilitate natural revegetation; reducing the risk of erosion and leading to eventual recovery of soil productivity through natural site recovery.

The action alternatives would decommission routes. The forest has adopted a multi-level approach to decommissioning roads, which range from closing the entrance of a road to signing the entrance, to fully re-contouring the land surface. Simply placing a sign or gate at the entrance to the route, changing the maintenance level or changing the designated use, but not making any physical improvements to the road or trail prism would be evaluated as having low effectiveness for improving soil and watershed conditions. These methods would not be considered effective in reclaiming soil productivity. Soil impacts such as compaction and decreased infiltration capacity on road or trail prisms can persist for several decades without implementation of physical reclamation measures, even though transportation or access use is discontinued. At this time for alternatives 2, 3 and 4, the preferred treatment for road decommissioning is to waterbar, outlsope, or selectively recontour, and subsoil the road surface 12-18 inches, seed and fertilize (if needed) and scatter slash on slopes. This effort would encourage infiltration and re-vegetation of the road surface, prevent erosion, and encourage eventual recovery of soil productivity through natural site recovery. Decommissioning roads would be moderately effective at restoring soil productivity over the short term (less than 10 years) on about 12 acres for alternative 2, 284 acres for alternative 3, and 331 acres for alternative 4. Eventually over the long term (greater than 10 years) full soil productivity would restored on decommissioned roads.

In the short term, by disturbing the road surface, decommissioning can compound soil impacts from roads or trails, such as accelerated erosion. A number of citizen groups consider these short-term impacts acceptable when working towards long-term watershed improvement

(Dellasala et al. 2003). There are no reclamation treatments that can immediately restore soil productivity to pre-disturbance conditions. Reclamation of site productivity is considered a long-term effect (over 10 years) since recovery of vegetation, soil and watershed conditions requires time.

Alternatives 2, 3 and 4 would put roads into storage; alternative 2 would store 136 miles, alternative 3 would store 76 miles and alternative 4 would store 82 miles. Roads would be water-barred and outlsoped, the road surface would be lightly scarified, and slash would be spread on steeper slopes. Simply by excluding certain forms of motorized use erosion risks can be reduced on roads. Once vegetation begins to establish on areas of the road that is unused, although compaction would still persist, surface runoff and sediment transport would decrease. The effects of closing and storing these routes would lead to natural revegetation of these sites and the reduction of erosion risk and eventual recovery of soil productivity through natural site recovery, until the road is re-used.

Some limited new construction of roads and trails is proposed under all action alternatives and would range from approximately 5 acres of ground disturbance for alternative 2, 8 acres for alternative 3, and 10 acres for alternative 4. Route construction best management practices (BMPs) would be used during construction to minimize the potential for soil erosion and provide mitigation consistent with management direction (FP pg. II/26). Some of this new construction would occur on sensitive soil types as shown in table 113. Figure 10, figure 11 and figure 12 show the locations of roads and trails relative to sensitive soil areas.

Programmatic Forest Plan Amendments for Management Areas N1 and R1 and for Big Game Security

The proposed programmatic Forest Plan Big Game Security Amendment and Forest Plan Amendment for Management Areas N1 and R1 would apply to the action alternatives, as described in more detail in chapter 2 and appendix F and appendix I. These proposals were considered for their effects to soils and were incorporated into the analysis for each alternative as described in the next section. In general, however, these actions would not result in new ground disturbance or shifts in motorized use patterns and therefore would not have measurable impacts to soil resources.

Table 113. New motorized routes proposed on sensitive soils by alternative

Alternative 1	Alternative 2	Alternative 3	Alternative 4
0	U-New-4043 – Ashcap sensitive soil type	U-New-4043 – Ashcap sensitive soil type	U-New-4043 – Ashcap sensitive soil type
		4081-New-A – floodprone, wet, rutting/compaction risk	
		1821-B1-New - Ashcap, floodprone, rutting/compaction risk	
		1841-D1-New2 - Slump-prone, Ashcap, floodprone	
		U-New-1006 - Ashcap, rutting/compaction risk	

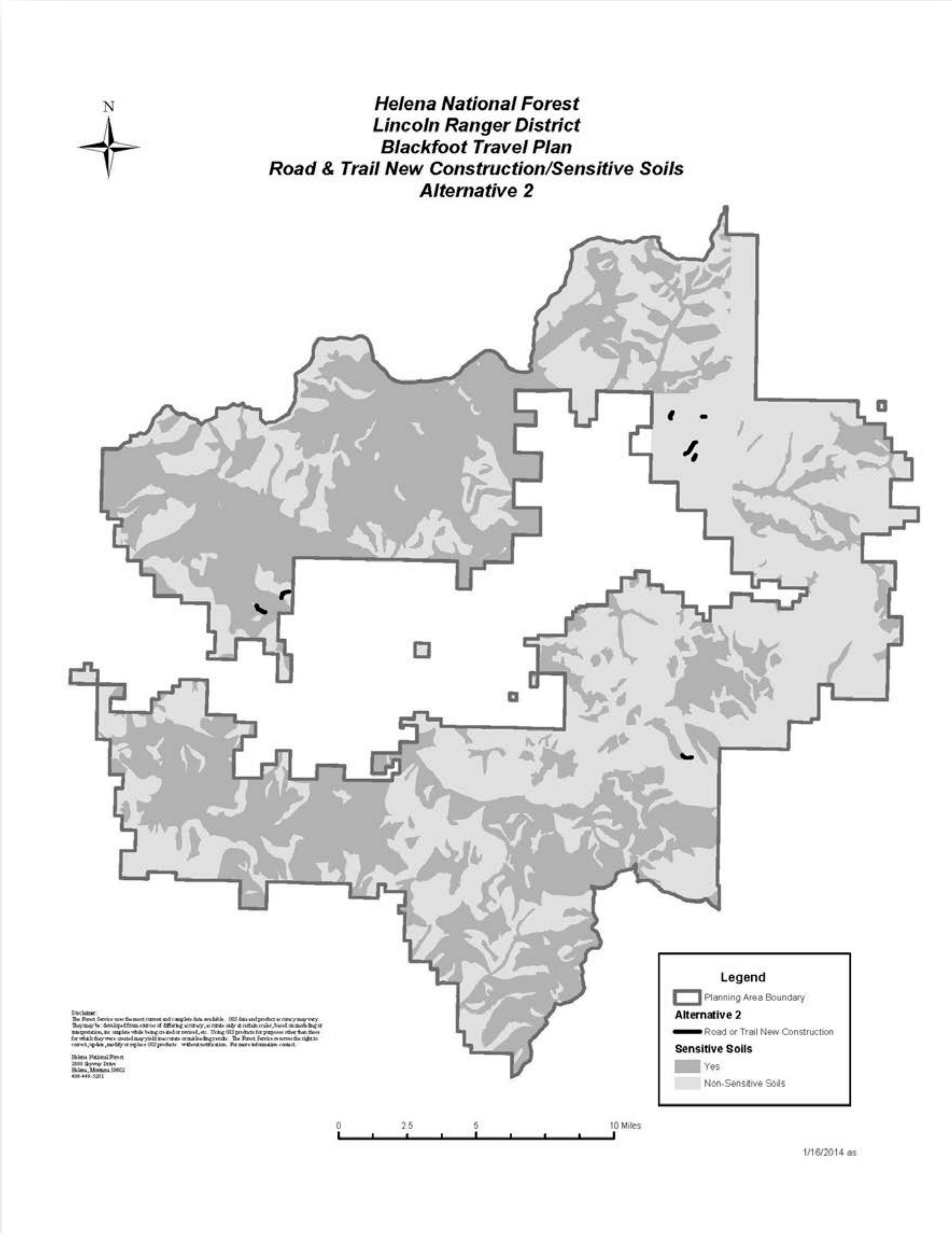

Figure 10. Alternative 2 proposed new motorized routes in sensitive soil locations

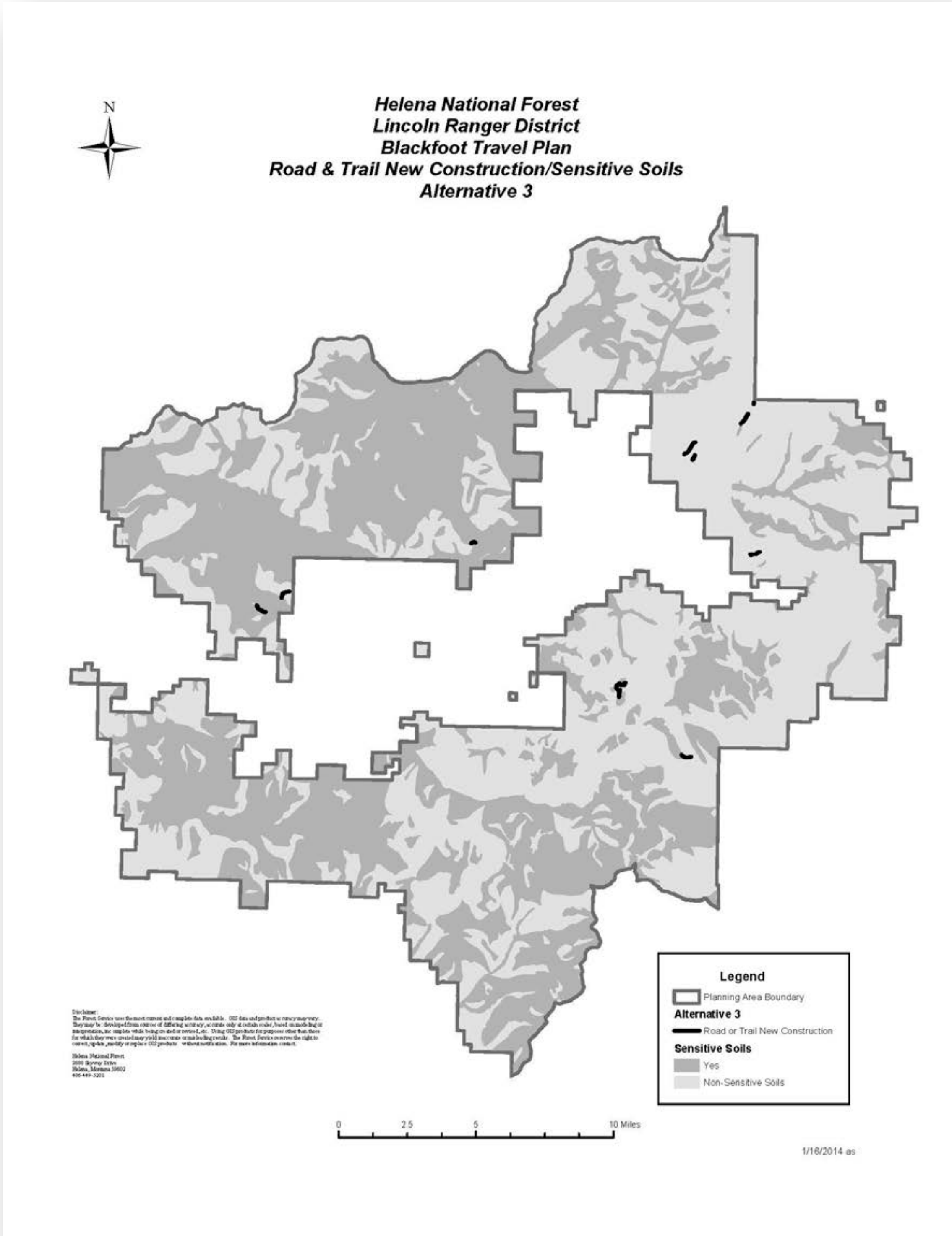

Figure 11. Alternative 3 proposed new motorized routes in sensitive soil locations

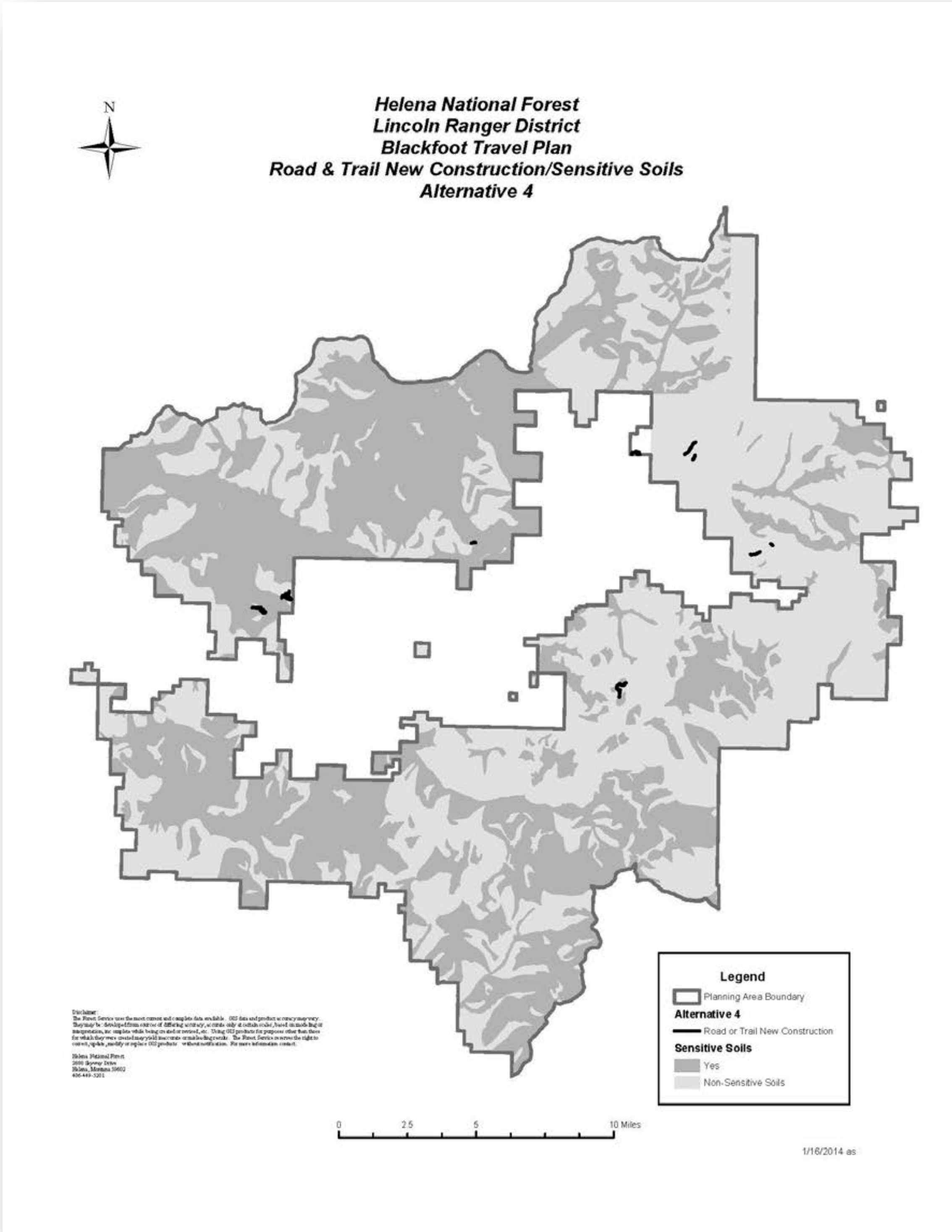

Figure 12. Alternative 4 proposed new motorized routes in sensitive soil locations

Alternative 1 – No Action

By definition, direct and indirect effects (40 CFR 1508.8), and cumulative effects (40 CFR 1508.7) result from proposed actions, and thus are not necessarily relevant to the no-action alternative, which is not proposing any changes to the current transportation system in the planning area.

This discussion focuses on what overall trends would continue in the planning area if no action is taken to address the purpose and need and travel planning objectives. Current levels of road and trail availability would continue in the planning area under alternative 1 with no additional actions that would add or remove roads or trails, or remove or restore soils formerly occupied by roads. Mileages of roads or trails on sensitive soil landtypes would remain unchanged from present levels.

Direct and Indirect Effects

Table 114 shows a description of the existing miles of motorized routes on each identified sensitive landtype feature. The quantities described do not take into account state highways, county roads or routes on lands of other ownership occurring on sensitive landtypes. Under this alternative, there would be no new motorized or non-motorized route construction, storage, closure or decommissioning.

Table 114. Alternative 1-open motorized routes on sensitive soils

Existing Open Motorized Routes on Sensitive Soil Types	Miles
Landslide/Slump prone	30
Wet/Flood prone	22
Granitic	18
Volcanic Ash	154
Total Miles	**224**

There would be no efforts under alternative 1 to close, store or decommission any unclassified routes in the planning area. This would result in a further degradation of soil conditions in these areas.

Essentially the no-action alternative would only perpetuate further degradation of areas which contain sensitive soils. Degradation may include compaction and loss of soil productivity, and increased runoff from non-vegetated areas which would transport sediment off the native site.

No ground disturbing activity is proposed as part of this alternative, therefore no soil related irreversible and/or irretrievable commitments exist.

Cumulative Effects

Continuing current travel management in the planning area, combined with other past, present, and reasonably foreseeable future activities (appendix D), would perpetuate soil degradation including erosion risks and soil productivity loss especially in areas with open routes on sensitive soils.

Other projects such as Stonewall and other vegetation management projects, livestock grazing, mining and dispersed recreational uses are ongoing and would continue in the planning area. Roads would continue to be used in the planning area and would contribute to sediment yield in the planning area. Degradation may include compaction, mass wasting, and increased runoff from non-vegetated areas which could transport sediment from roads to adjacent areas. Increased sediment and soil runoff are possible from these other activities including livestock grazing, particularly in riparian areas, and timber harvest. However, the primary human-caused sediment source in the planning area is from roads. Not taking action to reduce the open route network would continue these risks.

Regional Standards and Forest Plan Consistency

Generally, roads and trails are a dedicated use for the lands that comprise the road prism, including cut and fill slopes. Impacts to soil productivity resulting directly from the presence of roads and trails would not be evaluated for compliance with Region 1 soil quality standards for this analysis, because the affected land is managed for transportation uses not for vegetation production.

The National Forest Roads and Trails Act of 1964 authorize the Forest Service to establish and maintain a network of roads and trails on National Forest System Lands. Implicit in this legal direction is Forest Service authority to withdraw lands from vegetation production and related soil productivity on National Forest for dedication to road and trail corridors for transportation and access uses. Thus, Helena National Forest Plan guidance to sustain soil productivity when planning management activities (page II/26) would not be applicable to this decision to open, close or create new travel routes.

Alternative 1 does not move in the direction outlined in the Helena National Forest's Plan when managing for preservation of granitic soils. The criteria are described on page II/26 (Standard 3) under Soil Guidance states:

> "To reduce sedimentation associated with management activities, the highly sensitive granitic soils, which cover about 20 percent of the Forest, will have first priority for soil erosion control."

Areas with granitic soils have not received emphasis for road closure and decommissioning and erosion control efforts. However, alternative 1 would not result in an increase of routes open to wheeled motorized use occurring on granitic soils. Completely eliminating routes on all granitic landtypes would be most beneficial, however, it would be simply impractical to accomplish this and at the same time effectively manage the Forest. Overall, designated Forest routes are designed to minimize sediment production and erosion potential.

Summary of Effects

Within the planning area, open routes in sensitive landtypes have a higher risk of causing loss of soil productivity, compaction, degradation of soil structure, decreased infiltration and water holding capacity, reduction in organic material, accelerated surface erosion and exacerbation of mass failure risks, such as the risks of landslides or slumps. Closed routes also have some potential for soil loss and sedimentation, but less so than open routes.

Combining Landslide/Slump prone, Wet/Flood prone, Granitic and Volcanic Ash soil landtypes, there are currently about 224 total miles of routes open to wheeled motorized use on sensitive soils within the Blackfoot travel planning area.

Alternative 2

Project Design Features

Project design features specific to soils are listed in chapter 2 starting on page 43. These design features apply to alternative 2, 3 and 4.

Direct and Indirect Effects

General effects of road closure, storage, and decommissioning are described in the Effects Common to all Action Alternatives section of this analysis. This alternative proposes a modest reduction in roads open on sensitive soils, and road decommissioning that would lead to a modest increase in soil productivity in the planning area.

Table 115 shows a description of the miles of road proposed on each identified sensitive landtype feature. The quantities described do not take into account state highways, county roads or routes on private land occurring on sensitive landtypes.

Table 115. Change in open motorized routes on sensitive soils under alternative 2

Alternative 1-Open Motorized Routes-Existing Condition	Miles	Alternative 2-Open Motorized Routes	Miles
Landslide/Slump prone	30	Landslide/Slump prone	29
Wet/Flood prone	22	Wet/Flood prone	24
Granitic	18	Granitic	18
Volcanic Ash	154	Volcanic Ash	151
Total Miles	**224**	**Total Miles**	**222**

Alternative 2 would decrease open routes within the planning area by 98 miles total. On sensitive soils, open routes would decrease by 2 miles, or approximately 1 percent.

Actions proposed under this alternative include road storage, road decommissioning, and road and trail construction and reconstruction. These types of activities have the potential to impact soils as described in the Effects Common to All Action Alternatives section.

Alternative 2 also proposes to close, store or decommission 39 miles of the existing 60 miles of unclassified routes in the planning area, and to store an additional 135 miles of roads. Overall, these effects would be beneficial. However, because these actions would result in minimal-level motorized route closures on sensitive soils and low-level road decommissioning compared to the overall road density in the planning area, alternative 2 would result in a modest improvement for soils when compared to the no-action alternative.

Cumulative Effects

Alternative 2, when combined with other past, present, and reasonably foreseeable activities in the planning area (appendix D), would perpetuate existing soil degradation including erosion risks and soil productivity loss especially in areas which contain sensitive soils with open roads. The primary existing loss of soil productivity for the planning area would result from roads. Ongoing and future soil productivity loss may result from soil disturbance from livestock grazing, and activities associated with timber harvest such as the creation of log landings and use of skid trails. By far, the major source of erosion from anthropogenic sources on the forest is from roads.

Other projects such as the Stonewall and other vegetation management projects, livestock grazing, mining and dispersed recreational uses are ongoing and would continue in the planning area. The specific list of past, ongoing, and proposed projects considered for soil cumulative effects is listed appendix D. Roads would continue to be used in the planning area and would contribute to sediment yield in the planning area. Degradation of soils may include soil disturbance leading to soil compaction, mass wasting, and increased runoff and erosion from non-vegetated areas which could transport sediment from roads to adjacent areas.

Regional Standards and Forest Plan Consistency

Generally, roads and trails are a dedicated use for the lands that comprise the road prism. Impacts to soil productivity resulting directly from the presence of roads and trails would not be evaluated for compliance with Region 1 soil quality standards for this analysis, because the affected land is managed for transportation uses not for vegetation production.

The National Forest Roads and Trails Act of 1964 authorize the Forest Service to establish and maintain a network of roads and trails on National Forest System Lands. Implicit in this legal direction is Forest Service authority to withdraw lands from vegetation production and related soil productivity on National Forest for dedication to road and trail corridors for transportation and access uses. Thus, Helena National Forest Plan guidance to sustain soil productivity when planning management activities (page II/26) would not be applicable to this decision to open, close or create new travel routes.

Alternative 2 does not move in the direction outlined in the Helena National Forest’s Plan when managing for preservation of Granitic soils. The criteria are described on page II/26 (Standard 3) under Soil Guidance states:

> “To reduce sedimentation associated with management activities, the highly sensitive granitic soils, which cover about 20 percent of the Forest, will have first priority for soil erosion control.”

Existing roads and trails on sensitive soils were considered during project development, but were not given as much emphasis as resources that were identified as significant (see chapter 1). However, proposed actions under alternative 2 would reduce overall open road density, would implement best management practices and project design features to minimize impacts to overall soil quality and soil productivity, and would reduce the number of open roads on sensitive soil types.

It did not meet the purpose and need for action and management objectives to eliminate all routes on Granitic soil landtypes; however, alternative 2 would not result in an increase of routes open to wheeled motorized use on Granitic soils.

Overall, designated Forest routes are designed to minimize sediment production and erosion potential. BMPs would be employed for all aspects of road and trail management, construction, and reconstruction to protect sensitive soils

Summary of Effects

Implementing proposed actions under alternative 2 would reduce overall open road density, would implement best management practices and project design features to minimize impacts to overall soil quality and soil productivity, and would reduce the number of open roads on sensitive soil types. Open road density on sensitive soils would be reduced by about 1percent.

Alternative 3

Direct and Indirect Effects

General effects of road closure, storage, and decommissioning are described in the "Effects Common to all Action Alternatives" section of this analysis. Alternative 3 proposes a substantial reduction in roads open on sensitive soils, and a high level of road decommissioning that would lead to an increase in soil productivity in the planning area.

Table 116 shows a description of the miles of road proposed on each identified sensitive landtype feature. The quantities described do not take into account state highways, county roads or routes on private land occurring on sensitive landtypes.

Table 116. Change in open motorized routes on sensitive soils under alternative 3

Alternative 1-Open Motorized Routes-Existing Condition	Miles	Alternative 3 Open Motorized Routes	Miles
Landslide/Slump prone	30	Landslide/Slump prone	26
Wet/Flood prone	22	Wet/Flood prone	20
Granitic	18	Granitic	12
Volcanic Ash	154	Volcanic Ash	107
Total Miles	**224**	**Total Miles**	**165**

When comparing alternative 3 to alternative 1 the miles of routes open for wheeled motorized use decreases overall by 139 miles across the planning area as a whole, and approximately 59 miles or 26 percent on sensitive soils.

Actions proposed under this alternative include road storage, road decommissioning, and road and trail construction and reconstruction. These types of activities have the potential to impact soils as described in the Effects Common to All Action Alternatives section. For alternative 3, 54 miles of unclassified roads would be closed, 200 miles of roads would be decommissioned, 76 miles of road would be stored, and 3 miles of new motorized trails would be created. Effects of each of these activities are described in the "Effects Common to all Action Alternatives" section of this analysis. With 200 miles of road decommissioning proposed for alternative 3, this would encourage infiltration and re-vegetation of the road surface, prevent erosion, and encourage eventual recovery of soil productivity through natural site recovery (Luce 1997) on 284 acres. Reducing open routes on sensitive soils would also reduce the risk of erosion, sedimentation, and loss of soil productivity. Overall, these effects would be beneficial, and greater than beneficial effects from alternative 2 due to the substantially higher level of road decommissioning and reduction in open routes on sensitive soils. New road and motorized trail construction would impact approximately 8 acres. This would withdraw these areas from soil productive use and dedicate them to transportation use. With the implementation of best management practices and project design features, adverse effects of new construction would be minimized.

Cumulative Effects

Alternative 3, when combined with other past, present, and reasonably foreseeable activities in the planning area (appendix D), has the potential to perpetuate existing soil degradation including erosion risks and soil productivity loss especially in areas which contain sensitive soils with open roads. The primary existing loss of soil productivity for the planning area would result from roads. Ongoing and future soil productivity loss may result from soil disturbance from livestock grazing, and activities associated with timber harvest such as the creation of log landings and use of skid trails. By far, the major source of erosion from anthropogenic sources on the forest is from roads. Road decommissioning proposed in this alternative and the reduction of wheeled vehicle uses would lead to a beneficial effect. Soils located on decommissioned road segments would eventually recover productivity, have reduced erosion potential and begin to grow vegetation and accumulate organic matter.

Other projects such as the Stonewall and other vegetation management projects, livestock grazing, mining and dispersed recreational uses are ongoing and would continue in the planning area. The specific list of past, ongoing, and proposed projects considered for soil cumulative effects is listed in appendix D). Roads would continue to be used in the planning area and would contribute to sediment yield in the planning area. Degradation of soils may include soil disturbance leading to soil compaction, mass wasting, and increased runoff and erosion from non-vegetated areas which could transport sediment from roads to adjacent areas.

Regional Standards and Forest Plan Consistency

Regional soil standards and Forest Plan consistency for alternative 3 is the same as alternative 2 and described in more detail in the Soils Report (McNamara 2013) in the project record. Alternative 3 would result in a 6-mile (33 percent) reduction in motorized routes on granitic soils, which would go further than alternatives 1 and 2 in achieving the Forest Plan standard for reducing erosion potential on this sensitive soil type.

For more details on compliance with the Forest Plan, see appendix A, and for more details on compliance with other regulations and policy, see the Soils Report (McNamara 2013) in the project record.

Summary of Effects

Implementing alternative 3 would reduce overall open road density, would implement best management practices and project design features to minimize impacts to overall soil quality and soil productivity and would reduce the number of open roads on sensitive soil types. Open road density on sensitive soils would be reduced by about 26 percent**.**

Alternative 4

Direct and Indirect Effects

General effects of road closure, storage, and decommissioning are described in the “Effects Common to all Action Alternatives” section of this analysis. This alternative proposes a substantial reduction in roads currently open on sensitive soils, and a high level of road decommissioning that would lead to an increase in soil productivity in the planning area.

Table 117 shows a description of the miles of road proposed on each identified sensitive landtype feature. The quantities described do not take into account state highways, county roads or routes on private land occurring on sensitive landtypes.

Table 117. Change in open motorized routes on sensitive soils under alternative 4

Alternative 1 – Open motorized routes – existing condition	Miles	Alternative 4 – Open motorized routes	Miles
Landslide/Slump prone	30	Landslide/Slump prone	25
Wet/Flood prone	22	Wet/Flood prone	18
Granitic	18	Granitic	12
Volcanic Ash	154	Volcanic Ash	105
Total Miles	**224**	**Total Miles**	**160**

When comparing alternative 4 to alternative 1 the miles of routes open for wheeled motorized use decreases overall by 157 miles across the planning area as a whole, and by approximately 64 miles on sensitive soils.

Actions proposed under this alternative include road storage, road decommissioning, and road and trail construction and reconstruction. These types of activities have the potential to impact soils as described in the Effects Common to All Action Alternatives section. For alternative 4, 53 miles of unclassified roads would be closed, stored or decommissioned. Approximately 212 miles of roads would be decommissioned, 76 miles of road would be stored, and 4 miles of new motorized trails would be created. Effects of each of these activities are described in the “Effects Common to all Action Alternatives” section of this analysis. With 212 miles of road decommissioning proposed for alternative 4, this would encourage infiltration and re-vegetation of the road surface, prevent erosion, and encourage eventual recovery of soil productivity through natural site recovery (Luce 1997) on 284 acres. Reducing open routes on sensitive soils would also reduce the risk of erosion, sedimentation, and loss of soil productivity. Overall, these effects would be much greater than beneficial effects from alternative 2 due to the substantially higher level of road decommissioning and reduction in open routes on sensitive soils. New road and motorized trail construction would impact approximately 10 acres. This would withdraw these areas from soil productive use and dedicate them to transportation use. With the implementation of best management practices and project design features, the effect of this new construction would be minimized.

Cumulative Effects

Alternative 4 activities, when combined with other past, present, and reasonably foreseeable future activities in the planning area (appendix D), has the potential to perpetuate existing soil degradation including erosion risks and soil productivity loss especially in areas which contain sensitive soils with open roads. The primary existing loss of soil productivity for the planning area would result from roads. Ongoing and future soil productivity loss may result from soil disturbance from livestock grazing, and activities associated with timber harvest such as the creation of log landings and use of skid trails. The major source of erosion from anthropogenic sources on the forest is from roads. Road decommissioning proposed in this alternative and the reduction of wheeled vehicle uses would lead to a beneficial effect. Soils located on decommissioned road segments would eventually recover productivity, have reduced erosion potential and begin to grow vegetation and accumulate organic matter.

Other projects such as Stonewall and other vegetation management projects, livestock grazing, mining and dispersed recreational uses are ongoing and would continue in the planning area. Roads would continue to be used and would contribute to sediment yield in the planning area.

Degradation of soils may include soil disturbance leading to soil compaction, mass wasting, and increased runoff and erosion from non-vegetated areas, which could transport sediment from roads to adjacent areas.

Regional Standards and Forest Plan Consistency

Regional soil standards and Forest Plan consistency for alternative 4 is the same as described for alternatives 2 and 3, and is also described in more detail in the Soils Report (McNamara 2013) in the project record. Like alternative 3, alternative 4 would result in a 6-mile (33 percent) reduction in motorized routes on granitic soils, which would go further than alternatives 1 and 2 in achieving the Forest Plan standard for reducing erosion potential on this sensitive soil type.

For more details on compliance with the Forest Plan, see appendix A, and for more details on compliance with other regulations and policy, see the Soils Report (McNamara 2013) in the project record.

Summary of Effects

Implementing alternative 4 would reduce overall open road density, would implement best management practices and project design features to minimize impacts to overall soil quality and soil productivity, and would reduce the number of open roads on sensitive soil types. Open road density on sensitive soils would be reduced by about 29 percent.

Conclusions

Open motorized routes on sensitive soils have a higher risk of causing loss of soil productivity, compaction, and degradation of soil structure, decreased infiltration and water holding capacity, reduction in organic material, accelerated surface erosion and exacerbation of mass failure risks, such as the risks of landslides or slumps. These types of soil impacts can occur on the prism of all roads and trails, whether those routes are used for motorized or non-motorized access.

A proposal as part of this FEIS to programmatically amend the Helena National Forest Plan regarding the standard for the big game security index would establish a new big game security standard and would apply to all of the action alternatives. Another programmatic amendment to the Helena Forest Plan is being proposed as a part of this travel plan analysis. It addresses the location of a segment of the CDNST within a portion of N1 near Granite Butte. The effects of these amendments on soils have been considered in this analysis.

All action alternatives would reduce the number of open motorized routes on sensitive soils, but to varying degrees. As shown in table 118 alternative 4 goes the furthest of the action alternatives in this respect, with a 29 percent overall reduction in open routes on sensitive soils. This includes a reduction of open routes on granitic soils. Granitic soils are specifically mentioned in the Forest Plan for erosion control efforts. Open routes on granitic soils would be reduced by 33 percent under both alternatives 3 and 4.

Table 118. Miles of open motorized routes on sensitive soils by alternative

Sensitive Soil Type	Alternative 1 – miles of open motorized routes	Alternative 2 - miles of open motorized routes	Alternative 3 - miles of open motorized routes	Alternative 4 - miles of open motorized routes
Landslide/Slump prone	30	29	26	25
Wet/flood prone	22	24	20	18
Granitic	18	18	12	12
Volcanic ash	154	151	107	105
Total	224	222	165	160
Total percent reduction in open motorized routes on sensitive soils	**0**	**1%**	**26%**	**29%**

All action alternatives propose to close, store or decommission a portion of the unclassified routes in the planning area. Alternative 2 would result in a 65 percent reduction in unclassified routes; the remaining 21 miles or routes not closed, stored or decommissioned would become part of the designated road system. Alternative 3 would result in a 90 percent reduction in unclassified routes with the remaining 6 miles becoming part of the designated road system. Alternative 4 would result in an 88 percent reduction in unclassified routes with the remaining 7 miles becoming part of the road system. This reduction in unclassified routes, highest under alternative 3, would improve soil productivity and reduce the risk of soil loss and sedimentation. These routes are assumed to be the most detrimental to soil conditions because they were not developed over time without any erosion prevention measures. The effects of closing these routes would lead to natural revegetation of these sites and the reduction of erosion risk and eventual recovery of soil productivity through natural site recovery.

All action alternatives propose to decommission routes. Alternative 2 would decommission 8 miles, alternative 3 would decommission 200 miles and alternative 4 would decommission 212 miles. Decommissioning roads would be moderately effective at restoring soil productivity over the short term (less than10 years) on about 12 acres for alternative 2, 284 acres for alternative 3, and 331 acres for alternative 4. Eventually, over the long term (greater than 100 years) full soil productivity would be restored on decommissioned roads. Soil impacts such as compaction and decreased infiltration capacity on road or trail prisms can persist for several decades without implementation of physical reclamation measures, even though transportation or access use is discontinued. This effort would encourage infiltration and revegetation of the road surface, prevent erosion, and encourage eventual recovery of soil productivity through natural site recovery.

All action alternatives also propose to allow wheeled motor vehicle use within 300 feet of designated Forest System routes for the purposes of dispersed camping and parking associated with camping, as long as resource damage is not observed (see chapter 2 for more details on how this would be implemented). Soil displacement or compaction and subsequent loss of soil productivity could result from this activity. It is expected that the effects of this activity would be mitigated by closure of specific areas if adverse soil effects are observed.

All action alternatives propose to store roads for future use. Alternative 2 would store 133 miles, alternative 3 would store 76 miles, and alternative 4 would store 82 miles. Road storage would result in beneficial effects to soils, but less so than decommissioning would. Stored roads would be water-barred and out-sloped, the road surface would be lightly scarified, and slash would be spread on steeper slopes. Simply by excluding certain forms of motorized use erosion risks can be reduced on roads. The effects of closing and storing these routes would lead to natural re-vegetation of these sites and the reduction of erosion risk and eventual recovery of soil productivity through natural site recovery, until the road is re-used.

All action alternatives also propose some limited new road and trail construction. The extent of new ground disturbance outside of existing road and trail prisms is very low for all action alternatives. Approximately 5 acres of new ground disturbance would result from new construction under alternative 2, 8 acres under alternative 3 and 10 acres under alternative 4. Best Management Practices (BMPs) and project design features would be implemented to minimize soil erosion and would ensure these activities are in compliance with the Forest Plan.

For more details on compliance with the Forest Plan, see appendix A and for more details on compliance with other regulations and policy, see the Soils Report (McNamara 2014) in the project record.

Socioeconomics

Affected Environment

Existing Condition

The combination of small towns and rural settings, along with people from a wide variety of backgrounds, provides a diverse social environment for the geographical region around the Lincoln Ranger District of the Helena National Forest. Local residents pursue a wide variety of life-styles, but many share a common theme, an orientation to the outdoors and natural resources. This is reflected in both vocational and recreational pursuits including employment in agricultural, logging and milling, and mining operations, outfitter and guide businesses, hiking, hunting, fishing, camping and many other recreational activities.

Timber harvest and processing, recreation, mining, tourism, and agricultural industries are important to the economy of local areas. Despite the common concern for, and some dependence on natural resources within the local communities, social attitudes vary widely with respect to public land management. Local residents hold a broad spectrum of perspectives and preferences ranging from complete preservation to maximum development and recreational utilization of natural resources.

Population

The Blackfoot travel planning area includes portions of both Lewis & Clark and Powell Counties. Lewis & Clark, Cascade and Missoula Counties contain the closest major population centers where many forest users reside. In order to fully understand an economy and the potential impacts a Forest Service decision may have upon it, it is important to understand the communities that make up the area. Three of the four counties contain the urban areas of Helena, Great Falls and Missoula. All four counties contain vast expanses of rural communities as well as federal and state public lands. Lewis & Clark County and Missoula County saw population growth from 1970-2010 exceed that of the national average while Cascade County and Powell County witnessed their populations stagnate in the same time period.

Lewis & Clark County

The Lewis & Clark County population in 2010 was 63,604 up from 33,455 in 1970, a 90 percent increase. During that period population growth was steady with very few ebbs and flows. The median age of Lewis and Clark County has increased by 2.7 years since 2000, from 38 to 40.7, a 7 percent increase. The portion of the population with the greatest percentage of the total population is the 45-64 age-bracket, which contains 26.2 percent of the population. The majority of the population of Lewis and Clark County is in the Helena area and surrounding communities. Other population centers include Wolf Creek, Lincoln and Augusta.

Cascade County

The Cascade County population in 2010 was 81,509, down slightly from 82,258 in 1970; a -1 percent decrease. During that period population trends have been erratic, reaching a peak of slightly more than 86,000 in the late 1970s to a low of slightly under 78,000 in 1990 before rising again through the 1990s and leveling off during the 2000 decade. The median age of Cascade County in 2010 is 39.2 up 2.5 years from 36.7 in 2000, a 7 percent increase. The portion of the population that makes up the greatest share is 18 and under, which is 26 percent of the total. The major population center of Cascade County is Great Falls. Other population centers include Cascade, Neihart and Belt.

Powell County

The Powell County population in 2010 was 7,031 up slightly from 6,666 in 1970, a 5 percent increase. During that period population trends have been erratic from a high of approximately 7,300 in 1975 to a low of approximately 6,600 in 1989. The 1990s showed positive growth for the County, and then population began to decline in the 2000s before rebounding in the middle part of the decade. Powell County is definitely getting older with a median age of 44.5, which is 12 percent older than the median age of 39.7 in 2000. The major population center of Powell County is Deerlodge. Other smaller towns in the County include Elliston, Avon, and Helmville.

Missoula County

The Missoula County population in 2010 was 109,443 up from 58,472 in 1970, an 87 percent increase. Unlike Powell and Cascade County population growth has been steady and consistent since 1970, similar to the growth seen in Lewis and Clark County. Compared to the other Counties in the economic impact area Missoula County is young with a 2010 median age of 33.9, up slightly from 33.2 in 2000, a 2 percent increase. This younger demographic can largely be attributed to the presence of the University of Montana in Missoula, Missoula County's largest population center. Other communities in Missoula County include Seeley Lake, Clinton and Frenchtown.

Employment

The rate of unemployment is an important indicator of economic well-being. This figure can go up during national recessions or when more localized economies are affected by area downturns. There can also be significant seasonal variations in unemployment.

It is important to know how the unemployment rate has changed over time, whether there are periods of the year where the rate is higher or lower, and if this seasonality of unemployment has changed over time. Geographies that are heavily dependent on the tourism industry, for example, may show higher rates of unemployment during spring and fall "shoulder seasons." Places that rely heavily on the construction industry, for example, may have lower unemployment rates during the non-winter months.

As the economy of a place diversifies, it can become more resilient and less affected by downturns and rising unemployment rates. This is particularly true of places that are able to attract in-migration, retain manufacturing, and support a high-tech economy.

Public land agencies sometimes provide seasonal employment and may have an effect on the local rate of unemployment.

Lewis & Clark County

Annual unemployment rates have varied in the last 20 years from a high of 5.3 percent in 2011 to a low of 2.9 percent in 2007. From 1970 to 2010, wage and salary jobs (people who work for someone else) grew from 14,878 to 36,575, a 146 percent increase. During that same time period proprietors grew from 2,439 to 9,396, a 285 percent increase. Increased proprietorship can be a positive sign of entrepreneurial activity and economic strength; however it must be viewed in conjunction with proprietors' income trends. In areas of stressed economic growth people may work as a proprietor because there are no wage and salary positions available, or those available pay less.

During the period of 2001-2010 the sector of the economy that grew the most at 302 percent was mining (including fossil fuels); however it remained a small portion of the total employment picture at only 0.7 percent. The sector of the economy that grew the least was information which had a negative growth rate of -14.1 percent. As of 2010, government (federal, state and local) remained the largest employer at 24.5 percent of total employment by industry. This amount of government employment can largely be attributed to the presence of Montana's capital city, Helena, which also serves as the county seat of Lewis & Clark County.

Cascade County

Annual unemployment rates have varied in the last 20 years from a high of 6.2 percent in 1993 to a low of 3.1 percent in 2006. From 1970 to 2010 wage and salary employment grew from 32,198 to 40,765, a 27 percent increase. During the same time period proprietors grew from 5,099 to 9,833, a 93 percent increase.

During the period of 2001 to 2010 the sector of the economy that grew the most at 53.7 percent was mining (including fossil fuels), however like Lewis & Clark County this accounts for a very small percentage of the total employment by industry at only 0.3 percent. The sector of the economy that grew the least was forestry, fishing and related activities with a negative growth rate of -23 percent. Similar to Lewis and Clark County, government is the largest employer in Cascade County at 19.1 percent. This is mainly attributable to an air force base located in Great Falls, which has been a major employer in the area for many decades and traces its roots back to the World War II era.

Powell County

Annual unemployment rates have varied in the last 20 years from a high of 8.9 percent in 1993 to a low of 4.7 percent in 2006. From 1970 to 2010 wage and salary employment grew from 2,019 to 2,473, a 22 percent increase. During the same time period proprietors grew from 557 to 1,244, a 123 percent increase.

During the period of 2001 to 2010 the sector of the economy that grew the most at 103 percent was arts, entertainment and recreation, although it remains a minor player in the overall economy. The sector of the economy with the lowest growth rate was information with a-35.5 percent growth rate. Government is the largest employer in the county with 32.5 percent of the total employment by industry.

Missoula County

Annual unemployment rates have varied in the last 20 years from a high of 6.9 percent in 2010 to a low of 3 percent in 2006. From 1970 to 2010, wage and salary employment grew from 21,640 to 58,657, a 171 percent increase. During the same period proprietors grew from 3,499 to 16,928, a 384 percent increase.

During the period of 2001 to 2010 the sector of the economy that grew the most at 219 percent, was mining (including fossil fuels), although like Lewis & Clark and Cascade Counties, it is a minor component of total economic picture. The sector that grew the least was manufacturing with a -28.2 percent growth rate. Like all the counties in the impact area, Government is the largest employer in Missoula County, although it is the lowest of the analysis counties at 14.5 percent.

Income

Personal income is an important measure of economic development. Personal income indicators can show whether an economy is growing or slowing. Income can measured using different methods and it is important to understand the advantages and disadvantages of these methods. Changes in income, source of income and income distribution can show how the economy has developed over time.

Per capita income is considered one of the most important measures of economic well-being. However, this measure can be misleading. Per capita income is total personal income divided by population. Because total personal income includes non-labor income sources (dividends, interest, rent and transfer payments), it is possible for per capita income to be relatively high due to the presence of retirees and people with investment income. And because per capita income is calculated using total population and not the labor force as in average earnings per job, it is possible for per capita income to be relatively low when there are a disproportionate number of children and/or elderly people in the population. Unlike per capita income, which is affected by non-labor income, average earnings per job are an indicator of the quality of local employment. Higher average earnings per job indicate that there are relatively more high-wage occupations.

An important aspect to understanding an economy is to determine in which industries income is derived. There are three broad categories of employment. The first is non-services related, which includes farming, mining and manufacturing. The second is services related which includes industries such as retail trade, finance, insurance and real estate. The third is Government which consists of federal, state, local and military. In the last thirty years most growth in employment has been in the services related field. The services related field includes a wide variety of wages. Often the types of services related employment is different in rural versus urban areas and can affect the wages earned in those different environments.

Lewis & Clark County

From 1970 to 2010 average earnings per job (in 2011 dollars) adjusted for inflation increased from $40,049 to $44,198 a 10.4 percent increase. During the same time period, per capita income grew from $24,695 to $39,445 a 59.7 percent increase. In 2010, the three industry sectors with the largest personal income were government, at $765.1 million, health care and social assistance at $196.2 million and professional, scientific and technology at $172.8 million.

Employment and wages vary by industrial sector. Services related fields vary widely from financial fields to leisure and hospitality. In 2011 services related jobs employed the greatest percentage of workers at 62.3 percent; however average annual wages within the services related field remained lower than that of government and non-services related. The average annual wage in Lewis & Clark County for non-services in 2011 was $42,731, while government paid on average $64,977 and services paid $33,895.

Cascade County

From 1970 to 2010 average earnings per job (in 2011dollars) adjusted for inflation increased from $43,389 to $45,576 a 5 percent increase. During the same time period, per capita income grew from $23,118 to $40,015, a 73.1 percent increase. In 2010, the three industry sectors with the largest personal income were government, at $647.2 million, health care and social assistance at $361.2 million and retail trade at $185.9 million.

Employment and wages vary by industrial sector. Services related fields vary widely from financial fields to leisure and hospitality. In 2011 services related jobs employed the greatest percentage of workers at 74.1 percent; however average annual wages within the services related field remained lower than that of government and non-services related. The average annual wage in Cascade County for non-services in 2011 was $43,580, while government paid on average $43,528 and services paid $31,736.

Powell County

From 1970 to 2010 average earnings per job (in 2011dollars) adjusted for inflation increased slightly from $32,496 to $32,923, a 1 percent increase. During the same time period, per capita income grew from $17,277 to $26,835, a 55.3 percent increase. From 2001 to 2010, the three industry sectors that added the most personal income were government, at $15.5 million, Mining (including fossil fuels) at $10.4 million and arts, entertainment and recreation at $3.7 million.

Employment and wages vary by industrial sector. Services related fields vary widely from financial fields to leisure and hospitality. In 2011 services related jobs employed the greatest percentage of workers at 37.7 percent; however average annual wages within the services related field remained lower than Government and slightly higher than non-services related. The average annual wage in Powell County for non-services in 2011 was $24,515, while government paid on average $57,269 and services paid $26,187.

Missoula County

From 1970 to 2010 average earnings per job (in 2011dollars) adjusted for inflation decreased slightly from $39,891 to $39,372, a 1.3 percent decrease. During the same time period, per capita income grew from $20,054 to $35,864, a 78.9 percent increase. In 2010, the three industry sectors with the largest personal income were government, at $583.3 million, health care and social assistance at $510.6 million and retail trade at $279.4 million.

Employment and wages vary by industrial sector. Services related fields vary widely from financial fields to leisure and hospitality. In 2011 services related jobs employed the greatest percentage of workers at 74.5 percent; however average annual wages within the services related field remained lower than that of Government and non-services related. The average annual wage in Missoula County for non-services in 2011 was $40,552, while Government paid on average $42,847 and services paid $32,015.

Timber Management

In recent years timber management on the Lincoln Ranger District has focused primarily on hazard tree removal as a result of insect outbreaks. Hazard tree removal is designed to protect infrastructure and the health and safety of forest users and forest employees. There are two (Stonewall and Dalton) vegetation projects currently in analysis on the Lincoln Ranger District. Table 119 displays the timber volume output in CCF (hundred cubic feet) on the Lincoln Ranger District for the past three years. Approximately 2000 CCF is equal to 1 million board feet.

Table 119. Lincoln Ranger District timber sale volume sold

Fiscal Year	Volume Sold (CCF)
2010	12,159
2011	20,470
2012	1,614

Firewood Gathering

Firewood gathering is an important service that the Helena National Forest provides. According to census data conducted in 2000, 7.5 percent of Montana households use wood as a source of heat. Firewood cutters can purchase up to 12 cords of firewood annually for a fee of $60.00. In recent years the mountain pine beetle epidemic has produced a vast supply of firewood across the District. Most firewood cutters make use of roads close to town to fill their firewood permits. Under the no-action alternative firewood cutting is expected to continue at the level of volume sold in recent years. With the abundant supply of readily available firewood in the communities that surround the Blackfoot travel planning area, fuelwood will be an important and viable source of heat for homes in the area. Table 120 displays the volume of fuelwood sold on the Lincoln Ranger District in the last 3 years.

Table 120. Lincoln Ranger District fuelwood volume sold.

Fiscal Year	Volume Sold (Cords)
2010	965
2011	160
2012	688

Environmental Consequences

Methodology

Economic information used to describe the affected environment is compiled from various primary government sources. There is no new data collected specifically for this analysis. Existing county-level and national forest-level data is used to describe trends in the regional economy. County economic profiles are available from the Economic Profile System (EPS), which compiles and digests primary population and economic data from a variety of government sources into a report. Recent EPS reports, which include data up to 2010, provide a recent description of the population, employment, and income composition of the counties comprising the economic impact area for the Blackfoot travel planning area. The recent economic conditions vary for the four counties that have land in the planning area. Highlights of the EPS reports are presented in the previous section to describe the economies that may be impacted by the Blackfoot Travel Plan decision. As a result of the small number of firms in surrounding communities, employment and income figures were not available for some sectors of the economy due to disclosure restrictions. The key economic factors displayed for the affected environment include population, employment and income.

Measurement indicators were developed to quantify the impacts of the alternatives. The measurement indicators are:

- ♦ Changes in access to suitable timber lands for forest management
- ♦ Change in public access for firewood
- ♦ Changes in cost (financial expenditures) for road and trail maintenance and transportation system infrastructure

These indicators were chosen because these are the primary management activities on NFS land in these counties with the potential to affect economic conditions of the communities adjacent to the planning area. A qualitative evaluation of effects to recreational access and use is also included.

Recreational use in the Blackfoot travel planning area is impacted by changes to the road and trail system there (see the Recreation section of this chapter). Changes in recreational access and types of use in the planning area would result from any of the action alternatives; however, these changes are not expected to measurably affect the economy in the economic impact area

Access to suitable timber management areas is critical to successfully plan and implement feasible timber sales. Changes in access to timber management areas can negatively impact the ability to treat lands whose primary objective under the Forest Plan is to maintain active timber management. Without road access, timber management would likely only be able to be achieved via logging systems (helicopter) that are not economically viable in current market conditions or through the construction of new temporary or permanent roads which can considerably increase the cost of future projects.

When the 2005 Travel Rule was adopted, the Forest Service considered the consequences of this at a national level, in a qualitative cost/benefit analysis. This is described in more detail in the Socioeconomic Report for this project (Johnson 2013) but the primary conclusions were that:

- The benefits of the 2005 Travel Rule include an increase in sustainable, reliable, high-quality public access to National Forest System lands that would lead to enhanced recreation opportunities for visitors; improved public communication, improved public safety, more effective law enforcement, and improved travel management planning; reduced environmental damage; and a more consistent and defensible travel planning framework.
- The negative impacts include a reduction in unconstrained cross-country motor vehicle use for those that value this activity, and increased short-term Forest Service planning costs for travel planning efforts

Incomplete and Unavailable Information

Modeling of economic impacts using input/output analysis is often conducted to estimate the expected changes in the contribution of jobs and labor income to local economies following management decisions. In order to model changes to jobs and income, expectations for changes in forest visitation are needed. Due to a lack of district-level recreation impact monitoring data, no recreation visitation impacts are provided for the Blackfoot travel planning area. In lieu of this information, measurement indicators were developed to analyze changes in access for timber and fuelwood.

Spatial and Temporal Context for Effects Analysis

The analysis area includes Missoula, Powell, Lewis & Clark and Cascade counties in Montana. These counties are visible in figure 13 that follows.

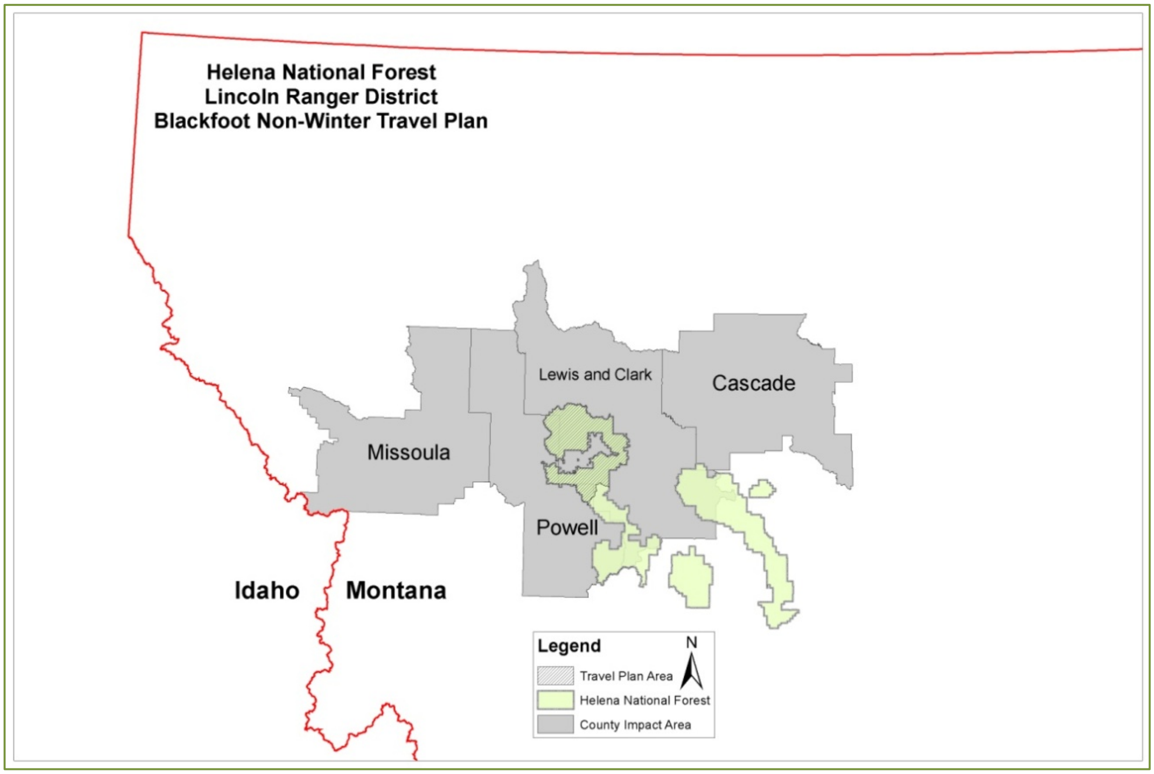

Figure 13. Economic impact area

Effects Common to All Alternatives

The effects of these expenditures implementing the action alternatives may be felt at the local level, however they would have little to no impact on the economic picture at the County level or over the larger economic impact area.

Changes in travel management between the action and no action alternatives have the potential to impact recreational use in the Blackfoot travel planning area. Changes in use are outlined in the Recreational Specialist Report. At the travel planning area scale, changes in the types and quantity of allowed uses under the travel plan may impact specific vendors or businesses to some degree positively or negatively, but the differences between all alternatives are not great enough that it would be expected to cause a substantial shift from the current existing condition. With all alternatives, the road system would remain at levels that would allow the forest access to most suitable timber lands over the planning horizon, although some variation does exist between alternatives. Public access to firewood is anticipated to remain adequate to meet public demand overall, although there are differences between alternatives in the timing and location of open roads available to collect firewood. Motorized and non-motorized based recreation would continue to greatly contribute to the local economies within the economic impact area and the smaller travel planning area.

Programmatic Forest Plan Amendments for Management Areas N1 and R1 and for Big Game Security

Amending the Forest Plan for Management Areas N1 and R1 would not result in measurable changes in use or access; this would allow for continued management of existing segments of either motorized or non-motorized trail in these management areas. Whether the current forest plan big game security standard 4A remains in place or if it is replaced, availability for the public to collect firewood would not change. In addition, administrative use for timber management purposes would not be prohibited under either standard. Therefore, suitable timber lands would remain accessible for management purposes.

Alternative 1 – No Action

Direct and Indirect Effects

Changes in Access to Suitable Timber Lands for Forest Management

The suitable timber management areas in the Blackfoot travel planning area are, for the most part, accessible for forest management under the no action alternative and would stay accessible for the planning horizon.

Change in Public Access for Firewood

With the abundance of available firewood in the Blackfoot Travel Planning area, no measurable change in public access for firewood would occur. It is anticipated that the public would continue to purchase firewood permits at or near current levels.

Financial Expenditures

Financial expenditures related to the planning area transportation system are listed in table 121. The effects of these expenditures may be felt at the local level; however they would have little to no impact on the economic picture at the county level or over the larger economic impact area.

Table 121. Alternative 1 financial expenditures

Activity	Cost/Mile(Acre)	Miles(Acre)	Alternative 1
Road Maintenance- Level 1*	$700	240	$168,000
Road Maintenance- Level 2*	$2,000	329	$658,000
Road Maintenance- Level 3*	$3,500	106	$371,000
Road Maintenance- Level 4*	$6,500	9	$58,500
Road Maintenance- Level 5*	$7,000	2	$14,000
Trail Maintenance	$150	127	$19,050
Trail construction	$12,000	N/A	$0
Road Construction	$3,750	N/A	$0
Road Decommission- Level 4	$5,250	N/A	$0
Road Storage- Level 3S	$3,000	N/A	$0
Weed Spraying Motorized (annual)**	($30)	(2003)	$60,009
Weed Spraying Non-Motorized(annual)**	($70)	(978)	$60,460
Weed Monitoring (annual)**	($3)	(2981)	$8,943
Total			$1,426,043

*This is the level of 100 percent road maintenance; the Forest spends $20,000 to $40,000 annually on road maintenance.

** Assumed that 1/3 of infested acres are treated annually

Economic Impact from Changes in Motorized and Non-Motorized Access

Alternative 1 would not change the current system of roads and trails in the planning area and therefore existing motorized vehicle access would not be affected; there would be no expected change in impact on the local or regional economy.

Alternative 2

Project Design Features

There is no specific project design feature tied to the socioeconomic resource. For a full list of project design features see chapter 2, page 42.

Direct and Indirect Effects

Changes in access to suitable timber lands for forest management

Alternative 2 decommissions 8 miles of National Forest System road. Many of these roads do not provide access to suitable timber grounds or provide redundant access to timber management areas and are appropriate to remove as system roads. Appropriate levels of road access would remain following implementation of this alternative. This alternative would not create a perceptible change in accessibility to suitable timber management lands and therefore would not reduce volume output or hinder future timber management in any measurable way.

Change in public access for firewood

With the abundance of available firewood in the Blackfoot travel planning area, no measurable change in public access for firewood would occur given the proposed changes in the transportation system. It is anticipated that the public would continue to purchase firewood permits at or near current levels.

Financial Expenditures

Financial expenditures related to the alternative 2 transportation system are listed in table 122. The effects of these expenditures may be felt at the local level; however they would have little to no impact on the economic picture at the county level or over the larger economic impact area.

Table 122. Alternative 2 financial expenditures

Activity	Cost/Mile(Acre)	Miles(Acre)	Alternative 2
Road Maintenance- Level 1*	$700	182	$127,400
Road Maintenance- Level 2*	$2,000	235	$470,000
Road Maintenance- Level 3*	$3,500	106	$371,000
Road Maintenance- Level 4*	$6,500	9	$58,500
Road Maintenance- Level 5*	$7,000	2	$14,000
Trail Maintenance	$150	212	$31,800
Trail construction	$12,000	31.5	$378,000
Motorized trail construction	$3,750	2	$7,500
Road Decommission- Level 4	$5,250	8	$42,000
Road Storage- Level 3S	$3,000	135	$405,000
Weed Spraying Motorized (annual)**	($30)	(1246)	$37,380
Weed Spraying Non-Motorized(annual)**	($70)	(1160)	$71,920
Weed Monitoring (annual)**	($3)	(2406)	$7,218
Weed spraying construction motorized (2 treatments of entire infestation)	($30)	(1.5)	$90
Total			$2,031,088

*This is the level of 100% road maintenance; the Forest spends $20,000 to $40,000 annually on road maintenance. Maintenance levels are described in the glossary

** Assumed that 1/3 of infested acres are treated annually

Economic Impact from Changes in Motorized and Non-Motorized Access

Alternative 2 would change the current system of open motorized trails in the planning area and therefore would affect motorized vehicle trail access. There would be an approximate 60 percent increase in the number of trails open to motorized use (an increase from 56 miles to 92 miles) and an approximate 70 percent increase in routes designated for non-motorized use (an increase from 71 miles to 120 miles). There would be, however, a 94-mile (or 21 percent) reduction in designated roads open for motorized use under alternative 2. Because OHV users also use roads and not just motorized trail, they would realize an overall net decrease (12 percent reduction) in designated motorized routes (roads and motorized trails combined) under alternative 2. This net decrease in routes open for motorized use is less for alternative 2 than for alternatives 3 or 4. There would be over 90 more miles of road and trail open to motorized use under this alternative compared to alternatives 3 and 4.

These changes in recreation use and travel management have the potential to impact individual users or vendors in the local communities. Some users may transition to other recreational activities while others may venture into other areas for their pursuits. These changes, although important to some, would have little to no impact on the individual counties or the larger economic impact area. The Lincoln Ranger District would continue to provide a diverse array of non-winter recreational opportunities, which would economically benefit the adjacent communities as well as the larger communities of Helena, Great Falls and Missoula.

Cumulative Effects

There would be minor cumulative effects overall that would result from the implementation of alternative 2 when combined with the effects of other past, present and reasonably foreseeable future actions (appendix D). Opportunities for timber harvest would remain unchanged. Planned timber management projects would not be affected by proposed road decommissioning; project design features and implementation measures common to any alternative selected would ensure other projects that require road or trail access (such as vegetation management projects) planned for future implementation would not be adversely impacted by road and trail changes under any of the alternatives. Current trends in timber harvest and firewood sales would continue into the future. Motorized and non-motorized recreation activities would continue to produce benefits to the local and regional economies.

Compliance with Forest Plan and Other Relevant Laws, Regulations, Policies and Plans

This alternative would comply with all Forest Plan standards and other laws, rules and regulations because there would be no measureable impact to the economic measurement indicators developed for this project.

Summary of Effects

Changes in recreation use and travel management have the potential to impact individual users or vendors in the local communities. Some users may transition to other recreational activities while others may venture into other areas for their pursuits. These changes, although important to some, would have little to no impact on the individual counties or the larger economic impact area. The Lincoln Ranger District would continue to provide a diverse array of non-winter recreational opportunities, which would economically benefit the adjacent communities as well as the larger communities of Helena, Great Falls and Missoula.

Change in access to timber management and change in public access for fuelwood gathering would be very minor and have no measureable impact on the overall economic impact area.

Implementation of alternative 2 would have little effect on the overall economy of the economic impact area, even with substantial increases in the level of open motorized and non-motorized routes across the planning area.

Alternative 3

Direct Effects and Indirect Effects

Changes in access to suitable timber lands for forest management

Alternative 3 would decommission 200 miles of National Forest System road. Many of these roads do not provide access to suitable timber grounds or provide redundant access to timber management areas, so are appropriate to remove as System roads. Although a greater number of miles of road would be removed from the National Forest System, in comparison with alternatives 1 and 2, appropriate levels of road access would remain following implementation of this alternative. This alternative would not create a perceptible change in accessibility to suitable timber management lands and therefore would not reduce harvest volume output or hinder future timber management in any measurable way.

Change in public access for firewood

With the abundance of available firewood in the Blackfoot travel planning area, no measurable change in public access for firewood would occur given the proposed changes in the transportation system. It is anticipated that the public would continue to purchase firewood permits at or near current levels.

Financial Expenditures

Financial expenditures related to the alternative3 transportation system are listed in table 123. The effects of these expenditures may be felt at the local level; however they would have little to no impact on the economic picture at the County level or over the larger economic impact area.

Table 123. Alternative 3 financial expenditures

Activity	Cost/Mile(Acre)	Miles(Acre)	Alternative 3
Road Maintenance- Level 1*	$700	128	$89,600
Road Maintenance- Level 2*	$2,000	185	$370,000
Road Maintenance- Level 3*	$3,500	106	$371,000
Road Maintenance- Level 4*	$6,500	9	$58,500
Road Maintenance- Level 5*	$7,000	2	$14,000
Trail Maintenance	$150	205	$30,750
Trail construction	$12,000	31.5	$378,000
Motorized trail Construction	$3,750	3	$11,250
Road Decommission- Level 4	$5,250	200	$1,050,000
Road Storage- Level 3S	$3,000	76	$228,000
Weed Spraying Motorized (annual)**	($30)	(1578)	$47,340
Weed Spraying Non-Motorized(annual)**	($62)	(1401)	$86,862
Weed Monitoring (annual)**	($3)	(2979)	$8937
Weed spraying construction motorized (2 treatments of entire infestation)	($30)	(13.4)	$804
Total			$2,745,043

*This is the level of 100% road maintenance; the Forest spends $20,000 to $40,000 annually on road maintenance. Maintenance levels are described in the glossary

** Assumed that 1/3 of infested acres are treated annually

Economic Impact from Changes in Motorized and Non-Motorized Access

Alternative 3 would change the current system of trails open to motor vehicle access in the planning area and therefore would affect motorized vehicle access. There would be an approximately 16 percent reduction in the number of trails open to motorized use (a decrease from 56 miles to 47 miles) and an approximately 122 percent increase in routes designated for non-motorized use (an increase from 71 miles to 158 miles). There would be, however, a 144-mile (or 32 percent) reduction in designated roads open for motorized use under alternative 3. Because OHV users also use roads and not just motorized trail, they would realize an overall net decrease (30 percent reduction) in designated motorized routes (roads and motorized trails combined) under alternative 3.

These changes in recreation use and travel management have the potential to impact individual users or vendors in the local communities. Some users may transition to other recreational activities while others may venture into other areas for their pursuits. These changes, although important to some, would have little to no impact on the individual counties or the larger economic impact area. The Lincoln Ranger District would continue to provide a diverse array of non-winter recreational opportunities, which would economically benefit the adjacent communities as well as the larger communities of Helena, Great Falls and Missoula.

Cumulative Effects

There would be minor cumulative effects f that would result from the implementation of alternative 3 when combined with the effects of other past, present and foreseeable future actions (appendix D). Opportunities for timber harvest would remain unchanged. Planned timber management projects would not be affected by proposed road decommissioning, although it is possible that future projects may have slightly higher road construction costs in order to gain access for management due to the level of road storage and decommissioning proposed under this alternative. Current trends in timber harvest and firewood sales would continue. Motorized and non-motorized recreation activities would continue to produce benefits to the local and regional economies.

Compliance with Forest Plan and Other Relevant Laws, Regulations, Policies and Plans

This alternative would comply with all Forest Plan standards and other laws, rules and regulations because there would be no measureable impact to the economic measurement indicators developed for this project.

For more details on compliance with the Forest Plan, see appendix A and for more details on compliance with other regulations and policy, see the socioeconomics report (Lahey 2012) in the project record.

Summary of Effects

Changes in recreation use and travel management have the potential to impact individual users or vendors in the local communities. Some users may transition to other recreational activities while others may venture into other areas for their pursuits. These changes, although important to some, would have little to no impact on the individual counties or the larger economic impact area. The Lincoln Ranger District would continue to provide a diverse array of non-winter recreational opportunities, which would economically benefit the adjacent communities as well as the larger communities of Helena, Great Falls and Missoula.

Change in access to timber management and change in public access for fuelwood gathering would be very minor and have no measureable impact on the overall economic impact area.

Implementation of alternative 3 would have little effect on the overall economy of the economic impact area.

Alternative 4

Direct and Indirect Effects

Changes in access to suitable timber lands for forest management

Access to suitable timber management areas is critical to successfully plan and implement feasible timber sales. Changes in existing access to timber management areas can negatively impact the ability to manage lands whose primary objective under the Forest Plan is to maintain active timber management. Without road access, timber management would likely only be achieved via logging systems (helicopter) that are not economically viable in current market conditions or through the construction of new temporary or permanent roads which can considerably increase the cost of future projects.

Alternative 4 decommissions 212 miles of National Forest System road. Many of these roads do not provide access to suitable timber grounds or provide redundant access to timber management areas and are appropriate to remove as system roads. Although a greater number of miles of road would be removed from the National Forest System, timber staff was involved with the development of alternative 4 to ensure that appropriate levels of road access remained following implementation of this alternative. It is not anticipated that this alternative would create any perceptible change in accessibility to suitable timber management lands and therefore would not reduce volume output or hinder future timber management in any measurable way.

Change in public access for firewood

It is anticipated that the system roads available to the public under alternative 4 would be adequate to meet public demand for firewood. The locations where firewood is available would be reduced from the existing condition due to changes in the road system and the timing of closures; however these changes would limit the ability to reasonably fill a permit. It is anticipated that the public would continue to purchase firewood permits near current levels.

Financial Expenditures

Financial expenditures related to the alternative 4 transportation system are listed in table 124. The effects of these expenditures may be felt at the local level; however they would have little to no impact on the economic picture at the County level or over the larger economic impact area.

Table 124. Alternative 4 financial expenditures

Activity	Cost/Mile(Acre)	Miles(Acre)	Alternative 4
Road Maintenance- Level 1*	$700	129	$90,300
Road Maintenance- Level 2*	$2,000	173	$346,000
Road Maintenance- Level 3*	$3,500	106	$371,000
Road Maintenance- Level 4*	$6,500	9	$58,550
Road Maintenance- Level 5*	$7,000	2	$14,000
Trail Maintenance	$150	193	$28,950
Trail construction	$12,000	21	$252,000
Motorized Road/Trail Construction	$3,750	4	$15,000
Road Decommission- Level 4	$5,250	212	$1,113,000
Road Storage- Level 3S	$3,000	82	$246,000
Weed Spraying Motorized (annual)**	($30)	(1512)	$45,360
Weed Spraying Non-Motorized(annual)**	($62)	(1522)	$94.360
Weed monitoring (annual)**	($3)	(3034)	$9102
Weed Spraying Construction Motorized (2 treatments of entire infestation)	($30)	(23.5)	$1,410
Weed Spraying Construction Non-Motorized (2 treatments of entire infestation)	($62)	(36.5)	$4,526
Total			$2,689,512

*This is the level of 100% road maintenance; the Forest spends $20,000 to $40,000 annually on road maintenance.
** Assumed that 1/3 of infested acres are treated annually

Economic Impact from Changes in Motorized and Non-Motorized Access

Alternative 4 would change the current system of trails in the planning area and therefore would affect motorized vehicle access. There would be a small, approximate 12 percent addition in the number of trails open to motorized use (an increase from 56 miles to 63 miles) and a substantial, approximate 59 percent increase in trails designated for non-motorized use (an increase from 71 miles to 130 miles). There would be, however, a 157-mile (or 35 percent) reduction in designated roads open for motorized use under alternative 4. Because OHV users also use roads and not just motorized trail, they would realize an overall net decrease (30 percent reduction) in designated motorized routes (roads and motorized trails combined) under alternative 4.This net reduction is slightly less under alternative 4 than under alternative 3. There would be 3 more miles of designated routes open for motorized access under alternative 4 than alternative 3.

These changes in recreation use and travel management have the potential to impact individual users or vendors in the local communities. Some users may transition to other recreational activities while others may venture into other areas for their pursuits. These changes, although important to some, would have little to no impact on the individual counties or the larger economic impact area. The Lincoln Ranger District would continue to provide a diverse array of non-winter recreational opportunities, which would economically benefit the adjacent communities as well as the larger communities of Helena, Great Falls and Missoula.

Cumulative Effects

There would be overall minor cumulative effects that would result from the implementation of alternative 4 when combined with the effects of other past, present and reasonably foreseeable future actions (appendix D). Opportunities for timber harvest would remain unchanged. Planned timber management projects would not be affected by proposed road decommissioning; project design features and implementation measures common to the action alternatives, if selected would ensure that other projects that require road or trail access (such as vegetation management projects) that are planned for future implementation would not be adversely impacted by road and trail changes under any of the alternatives. Current timber projects under analysis would not be affected by the decommissioning proposed in this travel plan; although it is possible that future projects may have slightly higher road construction costs in order to gain access for management due to the level of road storage and decommissioning proposed under this alternative. Current trends in timber harvest and firewood sales would continue into the future. Motorized and non-motorized recreation activities would continue to produce benefits to the local and regional economies.

Compliance with Forest Plan and Other Relevant Laws, Regulations, Policies and Plans

This alternative would comply with all Forest Plan standards and other laws, rules and regulations because there would be no measureable impact to the economic measurement indicators developed for this project.

For more details on compliance with the Forest Plan, see appendix A and for more details on compliance with other regulations and policy, see the socioeconomics report (Johnson 2013) in the project record.

Summary of Effects

Changes in recreation use and travel management have the potential to impact individual users or vendors in the local communities. Some users may transition to other recreational activities while others may venture into other areas for their pursuits. These changes, although important to some, would have little to no impact on the individual counties or the larger economic impact area, even with the substantial increase in routes designated for non-motorized use. The Lincoln Ranger District would continue to provide a diverse array of non-winter recreational opportunities, which would economically benefit the adjacent communities as well as the larger communities of Helena, Great Falls and Missoula.

Change in access to timber management and change in public access for fuelwood gathering would be very minor and have no measureable impact on the overall economic impact area.

Implementation of alternative 4 would have little effect on the overall economy of the economic impact area.

Conclusions

The four-county economic impact area has seen many changes in the last 40 years. These changes vary by county with Missoula and Lewis & Clark counties witnessing impressive population growth, while both Powell and Cascade county populations have stagnated. All four counties are getting older; although Missoula County age has increased only slightly. This increase in age is consistent with the rest of Montana and the Nation as “baby boomers” continue to age. Employment and income has also changed over the last 40 years as economies have continued to transition from a manufacturing to a service-based economy. This also is a trend that can be seen throughout Montana and the Rocky Mountain west.

Changes in recreation use and travel management displayed in this chapter and the supporting resource reports in the project record have the potential to impact individual users or vendors in the local communities. Some users may transition to other recreational activities while others may venture into other areas for their pursuits. These changes although important to some, would have little to no impact on the individual counties or the larger economic impact area. The Lincoln Ranger District would continue to provide a diverse array of non-winter recreational motorized and non-motorized opportunities, which would benefit the adjacent communities as well as the larger communities of Helena, Great Falls and Missoula.

All action alternatives would comply with all Forest Plan standards and other laws, rules and regulations related to social and economic resources. While road and trail access would change under any action alternative to varying degrees, these changes would not measurable affected future access for vegetation management needs to suitable timber land, fuelwood access or local or regional economies related to recreational access or use. The proposed programmatic Forest Plan Big Game Security Amendment and Forest Plan Amendment for Management Areas N1 and R1 and for would not affect the socioeconomic resource.

The implementation of any road and trail system comes with a cost; road and trail maintenance, construction and reconstruction, decommissioning, storage and invasive plant control (weed spraying) costs over time were estimated for each alternative. Alternative 1 and 2 would be the least expensive, alternative 3 would be the most expensive, and alternative 4 would be slightly less expensive than alternative 3.For more on compliance with the Forest Plan see appendix A, and for more on compliance with other regulations and policy, see the Socioeconomics Report (Johnson 2014) in the project record.

Scenery

Affected Environment

Existing Condition

Introduction

Scenery, just as any other resource, is an important component of the forest environment and must be cared for and managed for future generations. Visual resources vary by location and existing natural features including vegetation, water features, landform, geology, and human-made elements. All activities experienced by forest visitors occur in a scenic environment which is defined by the arrangement of the natural character of the landscape along with components of the built environment.

The terms visual resources, scenic resources, and scenery are used interchangeably in this analysis. This analysis describes the existing condition of the scenic resources within the planning area and discloses the potential effects of the alternatives on scenic resources.

Landscape Character

The planning area is located in the Broad Valley Rockies landscape character type subregion. The Broad Valley Rockies character type is an area characterized by widely spaced round-topped mountains and ridges separated by broad U-shaped valleys that allow for sweeping panoramic views from the valley floor (USDA Forest Service 1980). Inherently, the forest patterns of the planning area are characterized by mostly continuous vegetation composed of medium to dense stands of Douglas-fir and subalpine forests; these include lodgepole pine, Douglas-fir, and subalpine fir, with mixed coniferous forests of ponderosa pine and Douglas-fir. Small, open meadows break up the forest canopy on lower foothills and wetlands and streams break up the forest canopy throughout the planning area.

The planning area provides access to a variety of recreation opportunities. All recreation opportunities occur in a scenic environment which contributes to the recreation setting. While hunting and snowmobiling are the most popular recreation activities, other recreation uses include: camping, fishing, driving for pleasure, off highway vehicle travel and horseback riding, hiking, firewood gathering, berry picking, cross-country skiing and wildlife viewing

The variety class, or scenic attractiveness, of the planning area is common to the landscape with its rounded mountain features and coniferous forests. The vibrant, golden fall colors of aspen trees in small inclusions provide seasonal distinctive variety on a small scale throughout planning area, and water features, such as Blackfoot River, Alice Creek, Poorman Creek and wet meadow openings, add some variety in this landscape.

State Highways 200 and 279 are main highways used by people traveling to Lincoln and other places on the district. Other heavily used roads and popular recreation areas used for viewing scenery include: Copper Creek Road (NRSR 330), Aspen Grove Campground, Big Nelson Campground, Copper Creek Campground, the Lincoln District Office Use Area, Indian Meadows, and Snowbank Lake. Three trails in the planning area were considered as high-profile or “trails of interest” because of their popularity of use and public interest (CDNST, Helmville-Gould, and Stonewall). Some past timber harvests and fire activity within the planning area has varied the appearance of the forest. Areas of past treatments and burns can appear as breaks in the forest canopy when viewed from the transportation system within and outside the planning area. Although noticeable, the visible roads in these affected areas do not dominate the landscape settings and remain subordinate to the surrounding characteristic landscape.

Environmental Consequences

Methodology

This section describes the considerations, assumptions, methodologies, and indicators used to determine the effects of the proposed alternatives on the visual component of the planning area. The analysis was completed using the framework outlined in USDA Forest Service Handbook, The Visual Management System (VMS) (USDA Forest Service 1974). The proposed alternatives have the potential to affect both the visual resource itself, as well as the forest visitor's opportunity to view the resource. Roads and trails are most often the platform for viewing the Forest's scenery. On the other hand, the road or trail itself can affect visual quality if seen from another vantage point. Non-characteristic line quality created by road or trail segments is the greatest impact to the visual resource from the proposed alternatives. Roads and trails can create changes to a naturally appearing landscape by introducing noticeable deviations to the characteristic form, line, color, or texture of a landscape. The location and design of these segments can significantly reduce their visual impact.

Visual experiences in outdoor recreation settings vary and depend on whether a scene is viewed from a motorized or non-motorized mode of travel, the speed at which the traveler is moving, the distance from the viewing area, and topography. For instance, alterations seen in the landscape on steep topography are more visually apparent than on flat topography due to the viewing angle. The ability to identify and discern individual objects, patterns, and their relationship to the whole landscape, becomes more difficult the faster one travels because the duration of the view is decreased. However, the chances for a hiker to notice deviations on a trail increase, because the viewing period increases dramatically.

For the classification, analysis, and inventory of the visual resource, viewing is identified by the following distance zones (USDA Forest Service, 1974):

- Foreground (0 to 0.5 mile)
- Middleground (0.5 to 5 miles)
- Background (5 miles and greater)

Representative proposed route additions were field reviewed to determine effects of this type of activity on the visual resource. Additionally, Arc Map GIS was used to analyze the alternatives in regards to key viewshed locations, vegetative and topographic screening from the sensitive travel corridors, and Visual Quality Objectives (VQOs) assigned to the area.

Visual Quality Objectives provide direction for visual resources to determine the level of acceptable change for the landscape and are established in the Forest Plan. This analysis uses VQOs to determine if the alternatives meet Forest Plan standards and guidelines by comparing the degree of alterations from an otherwise natural-appearing forest landscape. The Helena National Forest Plan and Agriculture Handbook Number 462 provide definitions for the VQOs used for the visual management of lands administered by the Lincoln Ranger District.

Preservation VQO – This VQO provides for ecological changes only (USDA Forest Service 1995). Management activities, except for very low visual impact recreation facilities, are prohibited (USDA Forest Service 1974).

Retention VQO – Human activities are not evident to the casual forest visitor (USDA Forest Service 1986). This VQO provides for management activities that are not visually evident. Under retention, activities may only repeat form, line, color, and texture, which are frequently found in the characteristic landscape (USDA Forest Service 1974).

Partial Retention VQO – Human activities may be evident, but must remain subordinate to the characteristic landscape (USDA Forest Service 1986). Activities may also introduce form, line, color, or texture which are found infrequently or not at all in the characteristic landscape, but they should remain subordinate to the visual strength of the characteristic landscape (USDA Forest Service 1974).

Modification VQO – Human activities may dominate the characteristic landscape, but must, at the same time, follow naturally established form, line, color, and texture. It should appear as a natural occurrence when viewed in foreground or middleground (USDA Forest Service 1986).

Maximum Modification VQO – Human activity may dominate the characteristic landscape, but should appear as a natural occurrence when viewed as background (USDA Forest Service 1986).

The effects analysis will consider how each alternative meets these visual quality objectives from the transportation system within the planning area under each alternative. When reviewing the proposed project activities, a determination will be made as to whether the proposed activity would be evident to the casual forest visitor, evident but subordinate to the characteristic landscape, or dominate the characteristic landscape. In order to meet an identified visual quality objective, potential alterations in the landscape would have to meet the definition for the visual quality objective assigned to the area. The terms visual resources, scenic resources, and scenery are used interchangeably in this analysis.

Assumptions

The following assumptions were used in the scenery effects analysis:

- The continued prohibition of cross-country travel under any of the alternatives would continue to have a beneficial effect on scenery.
- Proposals for season of use, vehicle class restrictions, and parking and camping off of designated routes do not cause physical impositions that are permanent on the landscape, and therefore, do not effect scenic quality in terms of VQOs.

Spatial and Temporal Context for Effects Analysis

The “viewshed” is the unit of spatial analysis when considering effects associated with scenery. Viewsheds are considered areas seen from travel corridors. For this analysis, retention and partial retention VQOs that exist in the foreground distance zone of 0 to 0.5 mile were considered. Routes beyond this foreground distance zone are expected to be unseen due to vegetation, distance, and topography, rendering no effect. This determination was made through field review and GIS analysis of the proposed route additions, sensitive travel corridors, topographic and vegetation data layers, and aerial imagery.

Past, Present, and Foreseeable Activities Relevant to Cumulative Effects Analysis

The cumulative effects analysis for the visual resource considers the impact of the alternatives when combined with the following past, present, and reasonably foreseeable future actions and events: routes (both system and unclassified), any projects with decisions or proposals to close, abandon, add, or decommission system or unclassified roads, fuels and vegetation treatment, timber management and vegetation treatment, grazing management, minerals and geology, special uses and lands management, recreation, fish/wildlife/rare plant management and road/watershed management, among others. The “viewshed” is the unit of spatial analysis for determining cumulative effects. Viewsheds encompass lands generally seen from travel corridors. Retention and partial retention VQOs are typically assigned to key viewsheds where users have an interest in viewing scenery. The temporal scope is 20 years, because it is the approximate length of time for natural rehabilitation of unclassified routes.

Alternative 1 – No Action

Direct and Indirect Effects

Cross-country motor vehicle travel is currently prohibited in the planning area, and would continue with implementation of alternative 1. While this use is prohibited, some existing unclassified routes may be noticeable in the foreground distance zone, but generally, these activities remain subordinate to the characteristic landscape due to vegetative and topographic screening. If and when seen, these routes typically appear as any other forest road or trail. When an unclassified route intersects existing system roads and trails, the unclassified route would be seen briefly by the casual observer general driving at the posted speed limits. In most cases, the short duration for observation, in addition to the low development level and quality of the unclassified routes, would allow these roadside scenes to meet their prescribed VQO of retention or partial retention. Under alternative 1, these existing unclassified routes would not be closed, stored or decommissioned.

Alternative 1 would continue to implement the 2001 Tri-State OHV Decision allowing motorized use within 300 feet from the edge of roads and trails for the purposes of dispersed camping. Dispersed camping is an important legacy in the Blackfoot travel planning area and another way in which people enjoy scenery. The effects of this use are expected to meet visual quality objectives, as this use would likely not be noticeable to the casual forest visitor.

Opportunities to view scenery from roads and trails would continue and be unchanged from the existing condition. Scenery viewing opportunities along the identified trails of interest (CDNST, Helmville-Gould, and Stonewall) would remain unchanged from the existing condition

Cumulative Effects

Past activities have formed the current landscape aesthetics and recreation opportunities. Recreation activities, developments, and travel management activities, including the existing transportation system, most often form the viewing platform and opportunities for viewing scenery. Abandoning, closing or decommissioning roads generally results in a more naturally appearing landscape in the long term. These activities would not occur under alternative 1. Continuing the current road and trail system in the planning area combined with other forest existing and planned management activities, such as vegetation management projects, have the potential for affecting the visual resource; however, are expected to comply with the visual resources direction in the Forest Plan. Cumulatively, the effects of the existing road and trail system and continued use of unclassified routes along with the past, present, and reasonably foreseeable future actions could result in more unnatural-appearing landscape characteristics, resulting in lower VQO ratings that do not meet the retention or partial retention VQO along the forest's key viewsheds. Unnatural-appearing landscape characteristics may occur, since unclassified routes would not be maintained as part of the forest transportation system and may result in increased soil exposure uncharacteristic of the area. Although the majority of the forest would continue to have a natural appearance, it is anticipated that the no-action alternative along with the past, present, and reasonably foreseeable future actions would result in an increase in forest land that appears altered.

Alternative 2

Project Design Features and Mitigation Measures

Project design features are listed in chapter 2. Those specific to scenery, that would be implemented for alternatives 2, 3 or 4 include:

- If site specific resource protection measures are needed for proposed travel route construction, reconstruction, storage or decommissioning, such measures would use natural materials such as gravel, soil, and rocks to create barriers in order prevent vehicular access where needed. Since these physical measures borrow elements from the natural landscape, the visual scenes they create are expected to meet the definition of retention (i.e., activities will repeat the line, form, color, and texture frequently found in the characteristic landscape).

Direct and Indirect Effects

Similar to alternative 1, alternative 2 would continue to prohibit cross country motorized travel, In the short term, visual effects of past cross-country travel may be noticeable in the retention and partial retention VQO areas because rehabilitation of unclassified routes would take longer than 1 year. Visual evidence of cross-country travel would be reduced in the long term, allowing the viewshed scenes where impacts occurred to revegetate and take on characteristics associated with higher scenic integrity.

Actions having the potential to affect visual quality objectives from the existing scenic condition are those that propose newly constructed routes to be potentially seen and those that are physically removed from the system. Under alternative 2, a segment of new road construction is proposed, segments of new motorized trail are proposed, a segment of non-motorized trail is proposed, and segments of previously decommissioned roads are converted to motorized trail. New trailheads and parking areas are also proposed, as described in more detail in chapter 2 and in the recreation section of chapter 3. Most of these segments and areas occur in modification VQO, while some occur in partial retention VQO; none of the new construction occurs in retention VQO. These proposed routes would be designed to resemble the same class in terms of use, surface materials, and width as similar forest routes on the district. These additions are not at a level, scale, or frequency that would alter the overall landscape character enough to affect visual quality objectives. Most new trailheads and parking areas would be minimally developed. Improvements could consist of leveling and delineating parking areas, gravel surfacing, signing and restroom facilities. Although trailheads, parking areas, and their associated improvements would be noticeable, these facilities would be designed to reduce impacts to scenery by following agency best management practices for construction of developed recreation sites (USDA Forest Service 2012). Minimal impacts to scenery are expected with the implementation of project design features regarding appropriate signage and barriers.

Alternative 2 would allow wheeled motorized vehicle travel within 300 feet from the edge of designated system routes for the purpose of dispersed camping and parking associated with camping, with provisions for resource protection as described in more detail in chapter 2. With the provisions for resource protection proposed in this alternative, the effects of this use are expected to meet visual quality objectives, as this use would likely not be noticeable to the casual forest visitor. If site-specific issues arise, it is expected that these areas would be addressed via site-specific area closures or restrictions so that visual quality objectives would be met.

Alternative 2 also proposes decommissioning road segments, which may have some short-term effects on the landscape character. In the short term, exposed soils associated with decommissioning or storage may be noticeable, especially at intersections with forest transportation system routes. These effects would lessen as the area re-vegetates. Additionally, the footprints of decommissioned or stored roads typically remains evident, but are softened over time as a result of either natural or management-induced reclamation. Closing, decommissioning or storing roads that had continual rutting or poor location, would improve visual quality in the long term by improving these resource conditions.

Changes to the existing transportation system, such as season of use restrictions and closure to motorized use, have no direct or indirect effects on the landscape character since the routes would remain visible.

Route additions and changes to the existing transportation system would continue to provide a variety of opportunities to view scenery. These opportunities would vary from frequently traveled roads with shorter durations of view to remote motorized trails to hiking and other non-motorized uses with a much longer duration of view. The CDNST would continue to be a mix of motorized and non-motorized sections; there would be no increase in motorized use along the CDNST. The Helmville-Gould and Stonewall Trails would continue to be managed as motorized trails, offering the same scenery viewing opportunity. Although the mode of travel to view scenery may change, no sensitive scenery viewing areas would be lost.

Programmatic Forest Plan Amendments for Management Area N1 and R1 and for Big Game Security

Two programmatic Forest Plan amendments are proposed as part of alternative 2. One is the programmatic Forest Plan Big Game Security Amendment, and would not affect scenery or future visual resource management. The other is the Forest Plan Amendment for Management Areas N1 and R1and addresses the management of trails in these areas. These management areas are assigned retention VQO. The activities associated with these forest plan amendments would meet the management areas’ standards for visual resources and meet retention VQO.

Cumulative Effects

See the cumulative effects section under alternative 1 for the past, present, and reasonably foreseeable future actions considered, and other information on how the cumulative effects analysis was conducted.

Past activities have formed the current landscape aesthetics and recreation opportunities. Recreation activities, developments, and travel management activities, including the existing transportation system, most often form the viewing platform and opportunities for viewing scenery. Abandoning, closing or decommissioning roads generally results in a more natural-appearing landscape in the long term. Other forest management activities that have the potential for affecting the visual resource, such as vegetation management projects, are expected to comply with the visual resources direction in the Forest Plan. The majority of the forest would continue to have a natural appearance, and visually impacted areas would continue to rehabilitate, resulting in a more natural-appearing landscape. It is anticipated that this alternative along with the past, present, and reasonably foreseeable future actions would result in no cumulative effects to visual resources. With continued prohibition of cross-country motorized travel, a more natural-appearing landscape along the forest's key viewsheds would continue as unclassified cross-country routes are naturally reclaimed and revegetate.

Alternative 3

Direct and Indirect Effects

Effects resulting from the continued prohibition of cross-country motorized travel would be the same as those discussed under alternative 2.

The direct and indirect effects of the prohibition of cross-country travel and route additions proposed under alternative 3 are generally the same as those discussed under alternative 2 with differences in proposed segment additions, mileage of new construction, and the amount of proposed road storage and decommissioning. Alternative 3 proposes the same amount of new road construction as alterative 1. Alternative 3 proposes more new construction of motorized trails, but overall designates fewer miles of motorized trails. Alterative 3 proposes more new construction of non-motorized trails than alternative 2, including 31.5 miles of new mountain bike trail construction. The new trailheads and parking areas described for alternative 2 would also be designated as part of alternative 3. Most of these segments and areas occur in modification VQO, while some occur in partial retention VQO; none of the new construction occurs in retention VQO. The new mountain bike trail construction near Dalton Mountain occurs in partial retention VQO, while the rest occurs in modification VQO. This non-motorized trail construction, although noticeable, is expected to be subordinate to the surrounding landscape character due to the width and use of native surface materials. Most new trailheads and parking areas would be minimally developed. Improvements could consist of leveling and delineating parking areas, gravel surfacing, signing and restroom facilities. Although trailheads, parking areas, and their associated improvements would be noticeable, these facilities would be designed to reduce impacts to scenery by following agency best management practices for construction of developed recreation sites (USDA Forest Service 2012). Minimal impacts to scenery are expected with the implementation of project design features regarding appropriate signage and barriers.

The effects of wheeled motorized vehicle travel for dispersed camping and parking would be same as those discussed for alternative 2.

Alternative 3 proposes to decommission approximately 200 miles of road, which is more than alternative 2. The effect on landscape character would be less visible evidence of roads over time in comparison with alternative 2.

Route additions and changes to the existing transportation system would continue to provide a variety of opportunities to view scenery. These opportunities would vary from frequently traveled roads with shorter durations of view, to remote motorized trails, to hiking and other non-motorized uses with a much longer duration of view. Alternative 3 provides more scenery viewing with non-motorized uses than alternative 2, including a new system of mountain bike trails. The CDNST would be managed primarily for non-motorized use with some seasonal motorized use. The Helmville-Gould Trail would be managed for non-motorized use; motorized use would be prohibited. Stonewall Trail would continue to be managed as a motorized trail, with some seasonal restrictions. Although the mode of travel to view scenery may change, no sensitive scenery viewing areas would be lost.

Programmatic Forest Plan Amendments for Management Area N1 and R1 and for Big Game Security

A programmatic plan amendment regarding the standard for big game security index would not affect scenery or future visual resource management. A programmatic plan amendment for managing trails in Management Area N1 (MA R1 is not proposed in alternative 3) would not affect the visual resource.

Cumulative Effects

The cumulative effects of alternative 3 are the same as those discussed for alternative 2.

Alternative 4

Direct and Indirect Effects

The direct and indirect effects of the prohibition of cross-country travel and route additions proposed under alternative 4 are generally the same as those discussed under alternative 2 with differences in proposed segment additions, mileage of new construction, and the amount of proposed road storage and decommissioning. Alternative 4 proposes the same amount of new road construction as alterative 2. Alternative 4 proposes more new construction of motorized trails, but overall designates fewer miles of motorized trails. Alterative 4 proposes more new construction of non-motorized trails than alternative 2, including 20 miles of new mountain bike trail construction. Alternative 4 also proposes reconstruction of segments of road, motorized trail, and non-motorized trail. In addition to the trailheads and parking areas proposed for alternatives 2 and 3; two additional trailheads would be developed under alternative 4 as described in more detail in chapter 2 and the recreation section of chapter 3. Most of these new construction and reconstruction segments occur in modification VQO, while some occur in partial retention VQO; none of the new construction or reconstruction occurs in retention VQO. The new mountain bike trail construction near Dalton Mountain occurs in partial retention VQO, while the rest occurs in modification VQO. This non-motorized trail construction, although noticeable, is expected to be subordinate to the surrounding landscape character due to the width and use of native surface materials. Most new trailheads and parking areas would be minimally developed. Improvements could consist of leveling and delineating parking areas, gravel surfacing, signing and restroom facilities. Although trailheads, parking areas, and their associated improvements would be noticeable, these facilities would be designed to reduce impacts to scenery by following agency best management practices for construction of developed recreation sites (USDA Forest Service 2012). Minimal impacts to scenery are expected with the implementation of project design features regarding appropriate signage and barriers.

Alternative 4 would allow wheeled motorized vehicle travel within 300 feet from the edge of designated system routes for the purposes of dispersed camping and parking associated with camping, with provisions for resource protection as described in more detail in Chapter 2. With the provisions for resource protection proposed in this alternative, the effects of these uses are expected to meet visual quality objectives, and would likely not be noticeable to the casual forest visitor. If site-specific issues arise, it is expected that these areas would be addressed via site-specific area closures or restrictions so that visual quality objectives would be met.

Alternative 4 proposes to decommission approximately 212 miles of road, which is more than alternative 2. The effect on landscape character would be less visible evidence of roads over time, in comparison with alternative 2.

Route additions and changes to the existing transportation system would continue to provide a variety of opportunities to view scenery. These opportunities would vary from frequently traveled roads with shorter durations of view to remote motorized trails to hiking and other non-motorized uses with a much longer duration of view. Alternative 4 provides more scenery viewing with non-motorized uses than alternative 2, including a new system of mountain bike trails, but less than alternative 3. The CDNST would be managed primarily for non-motorized use with 1 mile of seasonal motorized use and less than 0.5 mile of motorized use. The Helmville Gould Trail would be managed for motorized use with some seasonal restrictions. Stonewall Trail would continue to be managed as a motorized trail, with some seasonal restrictions. Although the mode of travel to view scenery may change, no sensitive scenery viewing areas would be lost.

Programmatic Forest Plan Big Game Security Amendment and Forest Plan Amendment for Management Areas N1 and R1

Two Forest Plan amendments are proposed as part of this project. One is the programmatic Forest Plan Big Game Security Amendment, and would not affect scenery or future visual resource management. The other is the Forest Plan Amendment for Management Areas N1 and R1and addresses the management of trails in these areas. These management areas are assigned retention VQO. The activities associated with these forest plan amendments would meet the management areas' standards for visual resources and meet retention VQO.

Cumulative Effects

The cumulative effects of alternative 4 are the same as those discussed for alternatives 2 and 3.

Compliance with Forest Plan and Other Relevant Laws, Regulations, Policies and Plans

Existing and proposed roads and trails do not occur at the physical scale or frequency that when seen, change or dominate a particular landscape setting enough to exceed the prescribed Forest Plan visual quality objectives. Prescribed Forest Plan visual quality objectives for the affected management areas would continue to be met; this applies to cumulative effects as well.

For more details on compliance with the Forest Plan, see appendix A and for more details on compliance with other regulations and policy, see the Scenery Report (Boisseau and Hill 2013) available in the project record.

Irreversible and Irretrievable Commitments

There would be no permanent loss of future options or temporary loss of scenic resources under any of the alternatives.

Summary of Effects

Proposals for season of use, vehicle class restrictions, and parking and camping off designated routes do not cause physical impositions that are permanent on the landscape, and therefore, do not affect scenic quality in terms of not meeting allocated visual quality objectives.

Therefore, implementing the Travel Management Rule would not impose negative impacts upon the visual resources under any alternative because the Forest Plan prescribed visual quality objectives for the affected management areas would continue to be met.

For more details on compliance with the Forest Plan, see appendix A and for more details on compliance with other regulations and policy, see the Scenery Report (Hill 2014) in the project record.

Fire and Fuels

Affected Environment

Existing Condition

Two goals in the Forest Plan relate to wildland fire management; “1) Achieve a program where firefighter and public safety is the highest priority in every fire management activity, and 2) Wildland fire and prescribed fire are responsive to land resource management goals and objectives.” In order to successfully meet these goals, “…a viable system of roads and trails needs to be maintained on National Forest System lands that are not in designated Wilderness or Inventoried Roadless Areas.” This analysis focuses on how the alternatives would change road access and the ability for fire vehicles to access areas for fire suppression and prescribed fire access.

A transportation system can provide a number of beneficial fire/fuels needs such as access for ground-based fire suppression equipment; access to and from water sources, lookouts, communication sites, and medevac staging areas; and under certain burning conditions, fire breaks for fire suppression, anchor points for pre-positioning firefighting resources and fire line construction. Ample miles of roads in a given area also provides for options while fighting fire and potential safer, easier escape routes if needed. Additionally, roads may provide control lines for fuels projects during low intensity burns.

While roads provide the above beneficial accommodations, the number of open road miles also can have a direct impact on risk of human caused fires. The more miles open equates to more areas available to recreational uses e.g. firewood cutting and potentially more dispersed camping e.g. campfire use. There are about 446 miles of roads in the Blackfoot travel planning area available to the public for motorized use and 724 miles of roads available for fire management activities.

Environmental Consequences

Methodology

The quantitative effect of travel management on fire suppression and human-caused fire starts is difficult, if not impossible, to measure. Intuitively it can be stated that the more routes that are open for fire vehicle access, the better the suppression opportunities would be. Those same routes, if open to the public, would also provide an increase in the risk of human-caused fire starts under the right fuel and weather conditions, while also providing more opportunities for detection of new fire starts by forest users.

Fuels management projects, however, rely to a great degree on readily available administrative access for accomplishing land and resource objectives, thereby allowing alternatives to be quantitatively analyzed for this activity.

Assumptions

The overall goal for fire management in the Blackfoot travel planning area is to allow fire's natural ecological role in ecosystem restoration, maintenance, and functioning to occur, while minimizing the detrimental effects from unwanted wildland fires (wildfires). Fire management programs and activities would be economically viable, based on resource management objectives and values to be protected. They would be based on the best available science and responsive to public health and environmental quality considerations. Firefighter and public safety is the first priority in every fire management activity; property and resource values are always the second priority.

Wildfires would be suppressed with an appropriate suppression response that attempts to minimize costs while fully considering firefighter and public safety, values at risk, and resource objectives. The full range of possible suppression responses is available, from an aggressive control strategy to simply monitoring the incident, and may eventually include the management of wildland fires to meet resource objectives (Wildland Fire Use fires). The selected response for each wildland fire must consider safety of firefighters and the public as the highest priority.

Prescribed fires would be conducted in a manner consistent with land and resource management plans, public health considerations, and with an approved burn plan. The highest priority for application of prescribed fire would be in the short interval, fire-dependent ecosystems.

Mechanical treatments may be used to facilitate the beneficial effects of future wildland fire use or prescribed fires, or may be used as stand-alone treatments to meet land management objectives.

Spatial and Temporal Context for Effects Analysis

This analysis for direct, indirect and cumulative effects is focused on NFS lands within the Blackfoot travel planning area on the Lincoln Ranger District. The scope of this analysis in regard to fire and fuels management is the delineated planning area, the miles of forest transportation system within the planning area, and the roads that access the planning area. There may be opportunity for additional access through private or other agency lands but for the extent of this analysis, only those that are readily available are considered in this context (e.g., Highway 200, Highway 279). Fires can easily cross boundaries onto or from lands of other ownerships; however, the travel management of these areas is outside the scope of this analysis.

Past, Present, and Foreseeable Activities Relevant to Cumulative Effects Analysis

Past, present and reasonably foreseeable future actions are described in appendix D. This list of projects was reviewed to determine those projects that had the potential to overlap with actions proposed under alternatives 2, 3 and 4 either in space or time, related to fire and fuels management access.

Alternative 1 – No Action

Direct and Indirect Effects

There are currently about 446 miles of roads in the Blackfoot travel planning area available to the public for motorized use and 724 miles of roads available for fire management activities. There would be no change to the current management of travel routes, therefore, the level of fire risk or fire management activities would not be affected by the selection and implementation of this alternative. Areas that are currently not readily accessible for resource management activities such as timber harvest, fuels treatment, and ground-based fire suppression vehicles, would continue to be at risk for change due to the effects of severe wildland fires.

Wildfires would continue to be suppressed with an appropriate suppression response that attempts to minimize costs while fully considering firefighter and public safety, values at risk, and resource objectives. Prescribed fires would continue to be used to achieve resource management objectives.

Cumulative Effects

Alternative 1 would have no direct or indirect effects on fire suppression or fuel management because no project activities are proposed. There are no direct or indirect effects, so there would be no cumulative effects.

Summary of Effects

Current fire management and public access issues would not be affected by selection of this alternative. Routes that are restricted to administrative-use only would continue to provide access for fire management personnel and vehicles as long as those routes are maintained to that degree. The risk of human-caused fire starts adjacent to routes open to the public would be determined by weather and fuel conditions, and the amount of public use along those routes.

Effects Common to All Action Alternatives

Direct and Indirect Effects

All of the action alternatives feature some combination of opening and closing roads and trails.

The greater the number of routes that are open for fire vehicle access, the quicker the response time during a wildfire and the better the possibility of suppression opportunities. This would also allow vehicle access for prescribed burning activities being conducted by designated resources. However, it should also be noted that routes that are open to the public can sometimes increase the risk of human-caused fire starts under the right fuel and weather conditions.

Opening any new or currently closed roads or trails would have the effect of increasing the risk of human-caused fire starts during the times when vegetation is susceptible to combustion. Closing any currently accessible motorized route may have an impact on the response time and delivery of ground resources to any fire starts, or affect vehicle access to some prescribed burn areas, unless a gate or other type of movable barrier is used as the method of closure, permitting access for administrative use. Closure of any roads or trails would also tend to reduce the risk of human-caused fires by limiting or eliminating vehicle access into the areas traversed by these routes.

Firefighting suppression costs may increase due to the need for more extensive use of aerial firefighting resources such as helicopters, helitack crews, and retardant aircraft in areas that are no longer readily accessible by ground resources. In times of high fire activity, these aerial resources may be scarce, being committed to other assignments locally, regionally, or nationally. In these cases, area burned and total suppression costs may escalate substantially based on the need for additional resources and extended incident duration required to reach containment and control objectives.

Travel management decisions do not directly affect fire characteristics; however they can ultimately affect fire size, human-caused fire occurrence, and vegetation treatment options by allowing or prohibiting access to an area by (primarily) motorized wheeled vehicles.

The action alternatives propose motorized use within 300 feet of designated routes for dispersed camping, as described in more detail in chapter 2. These actions would not directly affect access for fire management purposes, but could result in a slight increase in the frequency of wildfire starts due to public access in these areas. The differences between the alternatives related to this use are explained under the alternative descriptions that follow.

Programmatic Forest Plan Amendments for Management Area N1 and R1 and for Big Game Security

Other aspects of the alternatives would not affect access for fire management purposes (e.g. proposed forest plan amendments, non-motorized trails, trailhead development, etc.) and therefore are not discussed further in this section.

Alternative 2

Project Design Features

There is no specific project design feature tied to the fire and fuels resource. A full list of project design features is in chapter 2, starting on page 42.

Direct and Indirect Effects

There would be about 352 miles of roads in the Blackfoot travel planning area available for public motorized use and 581 miles of roads available for fire management activities. Road access for fire suppression and fuels management projects would be reduced by about 143 miles (20 percent), while public motorized access would be reduced by 94 miles (21 percent).

Wildfires would continue to be suppressed with an appropriate suppression response that attempts to minimize costs while fully considering firefighter and public safety, values at risk, and resource objectives. Prescribed fires would continue to be used to achieve resource management objectives as per direction in FSM 5140, the Fire Management Plan, and approved NEPA documentation.

If this alternative were selected, fire response time may be longer than the current response time. However, roads proposed for storage could be re-opened on a case-by-case basis in a wildfire situation, a described in more detail in chapter 2.

Cumulative Effects

This action when combined with past, present, or future actions would not result in additional road closures because other projects listed in appendix D do not have substantial road closure activities proposed. There would be negligible to minor adverse cumulative effects from implementing alternative 2.

Summary of Effects

Alternative 2 would reduce open road access for fire management purposes within the planning area over the current condition; a reduction of about 20 percent. This could reduce firefighter response time during a wildfire, although closed roads (and in rare situation, stored roads) would be available for administrative use in emergency situations, reducing the likelihood that this reduction would be more than minor.

Alternative 3

Direct and Indirect Effects

There would be about 448 miles of roads in the Blackfoot travel planning area available for fire management activities, with 302 miles of these roads available to the public. Road access for fire suppression and fuels management projects would decrease by about 276 miles (38 percent), while public access would decrease by 144 miles (32 percent). Since there would be decommissioning of existing roads there would be fewer opportunities for vehicle access for fire suppression or prescribed fire activities.

Wildfires would continue to be suppressed with an appropriate suppression response that attempts to minimize costs while fully considering firefighter and public safety, values at risk, and resource objectives. Prescribed fires would continue to be used to achieve resource management objectives as per direction in FSM 5140, the Fire Management Plan, and approved NEPA documentation.

If this alternative were selected, fire response time may be longer than the current response time. However, roads proposed for storage could be re-opened on a case-by-case basis in a wildfire situation, a described in more detail in chapter 2.

Cumulative Effects

Combining past, present, or reasonably foreseeable future actions to implementation of alternative 3 would not result in additional road closures because other projects listed in appendix D do not have substantial road closure activities proposed. There would be negligible to minor adverse cumulative effects from implementing alternative 3.

Summary of Effects

Alternative 3 would reduce open road access for fire management purposes within the planning area over the current condition, a reduction of about 38 percent. This could reduce firefighter response time in a wildfire situation, although closed roads (and in rare situations, stored roads) would be available for administrative use in emergency situations, reducing the likelihood that this reduction would be more than minor. Alternative 3 would result in a greater reduction in road access for fire suppression and fuels management projects and public access than would alternative 2.

Alternative 4

Direct/Indirect Effects

There would be about 429 miles of roads in the Blackfoot travel planning area available for fire management activities, with 289 miles of these roads available to the public. Road access for fire suppression and fuels management projects would decrease by about 295 miles (41 percent), while public access would decrease by 157 miles (35 percent). Since there would be decommissioning of existing roads there would be fewer opportunities for vehicle access for fire suppression or prescribed fire activities.

Similar to all the other alternatives, there would be a combination of storing, decommissioning and new construction of roads and trails.

As described for alternatives 2 and 3, wheeled motorized vehicle travel would be allowed within 300 feet of designated system routes under alternative 4, including roads and trails (unless signed otherwise) for the purposes of dispersed camping, provided that this use would not damage resources, cross streams or riparian areas, and would not create any permanent routes. There may an increase in human caused fires in the areas where this travel is allowed on the National Forest System lands. Should there be any fires, the suppression of the fires would not change as long as we are safe and cost containment is being achieved.

Cumulative Effects

Alternative 4 when combined with past, present, or reasonably foreseeable future actions would not result in additional road closures because other projects listed in appendix D do not have substantial road closure activities proposed. There would be negligible to minor adverse cumulative effects from implementing alternative 3.

Summary of Effects

Alternative 4 would reduce open road access for fire management purposes within the planning area over the current condition, a reduction of about 41 percent. This could reduce firefighter response time in a wildfire situation, although closed roads and (in rare situations, stored roads) would be available for administrative use in emergency situations, reducing the likelihood that this reduction would be more than minor. Alternative 4 would result in a greater reduction in road access for fire suppression and fuels management projects and public access than would alternatives 2 or 3.

Conclusions

Response time is a critical factor in a wildfire situation, especially when human lives and firefighter safety may be at stake. There are differences among the alternatives in the level of reduction in open roads; however, all alternatives would provide adequate access for pre-positioning of firefighting resources across the roaded areas on National Forest System land in the Blackfoot travel planning area.

In terms of fuel projects, there is no change to the existing number of available road miles with alternative 1. There would be a reduction with alternatives 2, 3 and 4; however administrative uses would continue to be allowed on closed and stored roads where appropriate; it just may take a different approach and some added time to complete work in these areas.

In terms of wildfire situations, which can arise anywhere on the landscape, the concern for access is for firefighters to be able to safely access and leave a fire area, and for the public and residents on private land close to the National Forest to be able to leave a fire area safely. There would be no change in fire response and suppression under alternative 1.

Of the action alternatives, alternative 2 would provide the highest level of open road access and alternative 4 the least. The quantitative effect of travel management on fire suppression and human-caused fire starts is difficult, if not impossible, to measure. Intuitively, the more routes that are open for fire vehicle access, the better the suppression opportunities would be. Those same routes, if open to the public, could also indirectly result in risk of human-caused fire starts under the right fuel and weather conditions, while also providing more opportunities for detection of new fire starts by forest users.

While all action alternatives would reduce open road miles to varying degrees, with the highest level of reduction in alternative 4, the resulting road system under any of the action alternatives would still provide adequate access for wildfire suppression and prescribed fire activities.

All alternatives would be consistent with the direction in the Forest Plan and other laws and regulations related to wildfire suppression and other fire management activities.

For more details on compliance with the Forest Plan, see appendix A and for more details on compliance with other regulations and policy, see the Fire and Fuels Report (Gilbert 2014) in the project record.

Short-term Uses and Long-term Productivity

NEPA requires consideration of “the relationship between short-term uses of man’s environment and the maintenance and enhancement of long-term productivity” (40 CFR 1502.16). As declared by the Congress, this includes using all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans (NEPA Section 101).

All laws, regulations and policy were reviewed and analyzed for all travel plan alternatives, the proposed Forest Plan Big Game Security Amendment alternatives, and the proposed Forest Plan Amendment for Management Areas R1 and N1. Conclusions reached in the following sections pertain to all of these alternative components, documented in the project record and will be discussed in detail in the Records of Decision for this planning effort.

The change in driving on National Forest System roads and trails created by any of the action alternatives does not jeopardize the long-term productivity of the Helena National Forest. Proposed actions under any of the alternatives are designed to accomplish multiple objectives and would result in improved resources conditions over the long-term through a reduction in the density of the existing road network and changes in motorized and non-motorized uses. Improvements in soil productivity, water quality, wildlife habitat, among others, would result, over the long term in moving the planning area toward desired conditions. While roads and trails are areas removed from soil productivity and vegetation production, road decommissioning would lead to short-term improvements (less than 10 years) in soil productivity such as increased water infiltration. Over longer periods (greater than 10 years) decommissioned roads would continue to increase in soil productivity.

Unavoidable Adverse Effects

Implementation of any action alternative could cause some degree of environmental effects that cannot be completely mitigated or avoided. Unavoidable adverse effects often result from managing the land for one resource at the expense of the use or condition of other resources. Some adverse effects are short term and necessary to achieve long-term beneficial effects. For instance, new road and trail construction would impact soil and vegetation. Individual botanical and wildlife species may be harmed or disturbed. Soil erosion would likely be accelerated in some places. Each section of chapter 3 describes the spatial and temporal context for unavoidable adverse effects predicted from alternatives 2, 3, and 4. Many adverse effects can be reduced, mitigated, or avoided by limiting the extent or duration of effects. The interdisciplinary process was used to focus proposed activities where they would be most effective while limiting adverse effects. All action alternatives (alternatives 2, 3 and 4) include the implementation of a substantial list of design features and best management practices (chapter 2) intended to avoid, minimize the extent of, or reduce the potential for adverse effects on the environment.

Heritage (Cultural Resources)

Since no actions associated with this project would occur for alternative 1-no action, there would not be a need to inventory the planning area. Therefore, additional cultural resources data would not be realized. Continuation of current road and trail management would not result in unavoidable adverse impacts, but it would also not result in increased protection of cultural resources through route closures.

Travel management under the action alternatives may increase public access, and as a consequence, enhance opportunities for artifact collecting and vandalism. Travel management may inadvertently expose previously undiscovered prehistoric or historic sites. It is possible that exposed artifacts and/or ruins would be observed and not reported to the Forest Service, thus providing opportunities for artifact collecting and vandalism. However, the results of past cultural resources monitoring and inventories suggest that these kinds of indirect effects would be negligible.

Ground disturbing activities under the action alternatives consist of road closure, storage, decommissioning and new road and trail construction and reconstruction. These actions would require field inventory for cultural resources to comply with NHPA Section 106, NEPA and Forest Plan Standards. A phased approach under the Heritage Programmatic Agreement (PA) with the Montana State Historic Preservation Office (MT SHPO) has been approved and will require consultation prior to approval of these activities and will therefore minimize the potential for adverse impacts. Project design features have been developed that would ensure any identified heritage properties within 600 feet of roads or trails planned for obliterations, storage or other resource treatment would be identified and protected.

Minerals

The access to specific permitted minerals projects could be negatively affected by alternatives 2, 3 and 4 as shown in table 45 in the minerals analysis section. Mitigating these impacts may be possible and would have to be done on a case by case basis with the claimant.

Recreation

Under alternatives 2, 3, and 4 motorized recreationists would lose some riding opportunities currently available to them. In addition, the action alternatives each incorporate restrictions on the season of motorized use on designated motorized trails. These losses and restrictions would be offset to some degree by new motorized trail construction and road to trail conversions. For alternatives 2 and 4 there would be a net increase in designated motorized trails but a decrease under alternative 3.

Invasive Plant Species

Motorized routes generally increase the spread of weeds, because (1) motorized routes are often more accessible, (2) motor vehicles travel great distances, allowing visitors to access more terrain in a shorter time, including remote locations, and (3) motor vehicles have higher ground pressures and greater torque applied to soil and vegetation surfaces (Olive and Marion 2009). With fewer miles of motorized routes and more miles of non-motorized, stored and decommissioned routes, alternatives 2, 3, and 4 would be expected to reduce the risk of noxious weed introduction and spread compared to alternative 1.

Alternative 1 permits the most motorized use and has the largest amount of weed infestation near roads and trails. Alternative 1 would be expected to contribute most to the introduction and spread of noxious weeds in the planning area. Potential effects of the three action alternatives on noxious weeds in the planning area would be similar. All action alternatives would have a lower potential to spread noxious weeds than the current condition (alternative 1). There would be short-term adverse effects from the new construction and reconstruction proposed under alternatives 2, 3, and 4, as well as from storage and decommissioning actions. Project design features would reduce the chance for weed introduction and spread during the construction process. In the long-term, native plants would revegetate disturbed areas along newly constructed trails and stored and decommissioned sites. Increases in the miles of non-motorized, stored and decommissioned routes would have long-term beneficial effects on noxious weeds by removing these routes from regular use and thus, decreasing ground disturbance and transportation of weed propagules into these areas.

TES Plants

No federally listed plant species have potential to occur in the planning area. Five sensitive plant species are known to occur or have potential habitat but only two of these have known occurrences within 300 feet of roads and trails. Project design features would be implemented to ensure that any ground-disturbing activities proposed under any of the action alternatives would minimize or avoid any adverse impacts to sensitive plant populations. Proposed activities under all alternatives “may impact sensitive plant individuals but would not contribute to a trend toward federal listing or loss of viability.” All action alternatives would result in overall long-term beneficial effects due to a reduction in the density of roads and trails, particularly those open to motorized use.

Hydrology

Currently, full attainment of all beneficial uses in streams is not being met in several of the 6th-HUC watersheds within the Blackfoot travel planning area. In some of these impaired streams, beneficial uses are compromised due, at least in part, to land-use activities outside of HNF management. Under the no-action alternative, full attainment of all beneficial uses would still not be met in these watersheds. Although effects of forest roads and other management practices in place before April 1993 are exempt from this standard (MCA 75-5-317), in some cases, existing activities (e.g., forest roads) on the HNF managed portions of these watersheds might not meet the State requirement that “all reasonable land, soil and water conservation practices have been applied” (ARM 17.30.602) to minimize pollution.

Exemption notwithstanding, many of these roads could be considered to “cause excessive water pollution” (HNF Forest Plan, II/25) and should thus be “corrected where feasible” (ibid.), or stand in violation of the Forest Plan. Finally, planning for road decommissioning in the Blackfoot travel planning area generally cannot move forward in the absence of a travel plan decision. With these matters considered, of the three alternatives, alternative 1 offers the fewest opportunities to reduce the impact of the HNF road network on water quality and riparian conditions. All action alternatives would result in improved water quality and riparian conditions. Implementation of alternative 4 would result in the greatest improvement to the hydrologic resource through the reduction of sediment in the travel planning area, when compared to alternatives 1, 2 or 3, and would go the furthest in meeting Forest Plan direction for watershed management and water quality.

Soils

Essentially the no-action alternative would perpetuate further degradation of areas which contain sensitive soils. Degradation may include compaction and loss of soil productivity, and increased runoff from non-vegetated areas which would transport sediment off the native site and possibly cause soil erosion from concentrated runoff flowing off compacted areas.

While the action alternatives would decommission, store and close routes which would all benefit soils over the long term, they also propose varying levels of new road and trail construction. This would result in adverse impacts to soil due to soil displacement, loss of the O-horizon, compaction, and risk of soil erosion. New ground disturbance from these activities is relatively minor for any of the alternatives and implementation of best management practices and project design criteria would minimize the potential for adverse impacts and all action alternatives would reduce the number of miles of motorized routes on sensitive soils.

Irreversible and Irretrievable Commitments of Resources

An irreversible commitment of a resource is one that cannot be regained, such as the extinction of a species. An irretrievable commitment is one where the value of the resource is lost for a period of time, such as the loss of soil productivity from the existence of a road.

This planning effort does not involve any irreversible commitments of resources. The short-term and long-term impacts described in chapter 3 involve some irretrievable commitments, including the loss of soil and vegetation productivity in areas proposed for new roads and trails. All action alternatives propose the closure, storage and decommissioning of existing roads and trails to varying degrees. Decommissioning in particular would return these roadbeds to productive land over the long term resulting in a net benefit to productivity in the planning area.

Transportation

There are no irreversible or irretrievable commitments as a result of implementing any of the action alternatives. The implementation of the Travel Management Rule and the revision and combining of travel restriction seasons are completely reversible. These actions are also retrievable since changes in travel management decisions can be revised, changed or removed through the travel analysis process or by special order in the event of sudden, unforeseen or emergency situations.

Heritage (Cultural Resources)

Removal or disturbance of previously identified or unidentified cultural resources would result in irreversible and irretrievable loss of data. However, there would be no irreversible or irretrievable effect to cultural resources as a direct result of implementing this travel plan since all known archaeological sites would be avoided and not disturbed. Indirectly travel management may increase public access, and as a consequence, enhance opportunities for artifact collecting and vandalism. Travel management, especially road decommissioning, may inadvertently expose previously undiscovered prehistoric or historic sites destroying their context. Context in archaeology refers to the relationship that artifacts have to each other and the situation in which they are found. Every artifact found on an archaeological site has a precisely defined location. In addition, it is possible that exposed artifacts and/or features would be observed and not reported to the Forest Service, thus providing opportunities for future artifact collecting and vandalism. When people remove an artifact without recording its precise location the context is lost forever and the artifact has little or no scientific value. This context is what allows archaeologists to understand the relationship between artifacts on the same site, as well as how different archaeological sites are related to each other

Aquatic Species and Habitat

An irretrievable commitment of the action alternatives would be continued sediment delivery to streams from the resulting road network, and continued impact to riparian areas traversed by roads that remain open as a result of the decision. Another irretrievable commitment to all action alternatives would be a greater difficulty in the future to decommission roads known to be water quality problems that are designated as open to wheeled traffic for at least part of the year by this decision. While future closing and decommissioning of any road is not precluded by an “open” classification in this travel plan, the hurdle to accomplish this would be higher.

Invasive Species

The effects of noxious weed infestations are adverse to native fauna and flora and present a great large-scale threat to native ecosystems in the Nation’s wild lands (Lonsdale 1999, Mack et al. 2001, Lodge and Shrader-Frechette 2003, Pauchard et al. 2003). At high infestation levels these effects are adverse due to the loss of native plant diversity, reduction of wildlife habitat and forage, increase in erosion and depletion of soil moisture and nutrient levels. These effects are common to all alternatives due to the effects of noxious weeds whether ground disturbance occurs or not. If noxious weed populations are not controlled, these effects could be irreversible. With ongoing treatment by the Forest weed program, noxious weeds would be treated on a regular basis and adverse effects would not be irreversible or irretrievable.

TES Plants

All alternatives would result in either retaining the same level of proximity of motorized routes to Missoula phlox and whitebark pine populations (the only two TES plant species with potential to be affected by proposed activities) or reducing this proximity through route closures. The risk of invasive species spread into these sensitive plant populations would not measurably change with any of the alternatives. While adverse impacts are possible, they would be minimized through best management practices and the implementation of project design features. This proximity is reduced the most under alternative 4, resulting in beneficial impacts to these species. For all TES plant species, proposed actions under all alternatives may impact individuals but would not contribute to a trend toward federal listing or loss of viability because the species does not occur in the vicinity of roads or trails or project design criteria would protect any plants known or discovered during implementation

Hydrology

An irretrievable commitment of alternative 1-no-action alternative, would be continued sediment delivery to streams from the existing road network, and continued impact to riparian areas traversed by roads. There are no irreversible commitments from this alternative.

An irretrievable commitment of the action alternatives 2, 3 and 4 would be continued sediment delivery to streams from the existing road network, and continued impact to riparian areas traversed by roads that remain open as a result of the decision. Another irretrievable commitment would be a greater difficulty in the future to decommission roads known to be water quality problems that are designated as open to wheeled traffic for at least part of the year by this decision. There are no irreversible commitments from this alternative.

Soils

New roads and trails are proposed for construction or reconstruction under alternatives 2, 3 and 4. These new roads and trails would be areas where land would be withdrawn from soil productive use, and dedicated to transportation use. Minor amounts of ground disturbing activity would occur as part of this travel planning effort under all alternatives, including routine maintenance of the transportation under alternative 1. Land committed to transportation system is considered an irretrievable commitment during the time period that the land is obligated for this purpose.

Other Required Disclosures

NEPA at 40 CFR 1502.25(a) directs “to the fullest extent possible, agencies shall prepare draft environmental impact statements concurrently with and integrated with …other environmental review laws and executive orders.”

These laws, regulations and policy were reviewed and analyzed for all travel plan alternatives, the proposed Forest Plan Big Game Security Amendment alternatives, and the proposed Forest Plan Amendment for Management Areas R1 and N1.

Environmental Justice Act

Executive Order 12898 (Feb. 11, 1994) requires all federal agencies to make environmental justice part of each agencies mission, by identifying and addressing, as appropriate, disproportionately high, and negative human health or environmental effects on minority populations or low-income populations. The alternatives were assessed to determine whether they would disproportionately impact minority or low-income populations, in accordance with Executive Order 12898.

None of the alternatives would have a disproportionate health or environmental risk on any minority or low income communities as route closures primarily focus on restricting off-road travel and closure of high-clearance dirt roads and not those most important for vehicular access.

None of the alternatives would have a disproportionate economic effect on any community or minority or low-income population. The effects to jobs and income from all alternatives studied are a very small portion. There is no evidence that any loss of jobs or income would disproportionately affect minority populations in or adjacent to the planning area.

We have consulted with potentially affected tribes and effects on their rights and concerns have been considered within the analysis of alternatives. American Indian populations would not be disproportionately impacted under any alternative with avoidance of heritage resources, consideration of traditional values, and reasonable access and forest product collection allowed through agreements, permits, and recognition of their sovereignty and legal rights.

American Indian Religious Freedom Act

This proposal would not conflict with any religious freedom rights of any Tribal group. See Cultural Resources section and the Cultural Resources Specialist Report in the project files.

American Indian Rights

This proposal would not conflict with any inherent rights or treaty provisions of any Tribal group. See Cultural Resources section and the Cultural Resources Specialist Report in the project files

Social Groups

The project would have no impacts on any social groups, including minorities, Native American Indians, women, or the civil liberties of any American citizen.

Congressionally Designated Areas

- Wilderness: There are no lands designated in the planning area as Wilderness
- Wilderness Study Areas; There are no lands designated in the planning area as Wilderness Study Areas or recommended for wilderness classification
- National Recreation Areas: There are no lands designated in the planning area as National Recreation Areas.

Energy Requirements and Conservation Potential

The potential energy consumption associated with the proposed action and alternatives as well as the differences between the alternatives is not measurable

Floodplains (Executive Order 11988)

Upon implementation project activities would be done in compliance with Executive Order 11988.

Inventoried Roadless Areas (IRAs)

The quality of wilderness characteristics in IRAs would be enhanced with implementation of this project through reduced motorized use in these areas.

Undeveloped / Unroaded Character / Potential Wilderness

The quality of wilderness characteristics in IRAs would be enhanced with implementation of this project through reduced motorized use in these areas.

National Landmarks

There are no National landmarks in the planning area. Therefore, no impacts would occur for any National landmark.

Municipal Watersheds

There are no municipal watersheds affected by the project; therefore, no impacts would occur on any municipal watersheds.

Parklands

There are no lands within the proposed planning area that would be characterized as parklands.

Prime Farmlands, Rangelands, and Forestlands

The planning area is not located in or adjacent to prime farmlands; therefore, there would be no impacts to prime farmlands. The planning area does not contain prime rangeland because of soils and climate, and none of the proposed activities in the project would convert rangelands to other uses. Therefore, there would be no impacts on prime rangelands. The project would not convert forestlands to other uses. All lands designated as forested would be retained and managed as forested; therefore, there would be no negative impacts on prime forestland.

Research Natural Areas (RNA)

A Forest Plan amendment for the proposed Granite Butte RNA (Management Area N1) would be necessary for all action alternatives to allow continued use on one trail in this area.

Wetlands (Executive Order 11990)

Upon implementation project activities would be done in compliance with Executive Order 11990.

Wild and Scenic Rivers

There are no wild and scenic rivers in the planning area.

Endangered Species Act

The analysis shown in the water resources section of FEIS chapter 3 concluded that implementation of travel plan alternatives, the Forest Plan Big Game Security Amendment alternatives and Forest Plan Amemdment For Management Areas R1 And N1 are consistent with the Endangered Species Act.

National Historic Preservation Act

The analysis shown in the water resources section of FEIS chapter 3 concluded that implementation of travel plan alternatives, Forest Plan Big Game Security Amendment alternatives and Forest Plan Amemdment For Management Areas R1 And N1 are consistent with the National Historic Preservation Act.

Clean Water Act

The analysis shown in the water resources section of FEIS chapter 3 concluded that implementation of Travel Plan alternatives, Forest Plan Big Game Security Amendment alternatives and Forest Plan Amemdment For Management Areas R1 And N1 are consistent with the Clean Water Act.

Incomplete or Unavailable Information

Roads

It is possible that there are existing unclassified routes that were unknowingly not identified on-the-ground for this analysis.

Heritage

We did not complete an on-the-ground compliance survey of every road and trail closures and new construction proposed in the project alternatives. Closed roads and trails that are proposed for reclamation would require NHPA Section 106 compliance reviews since they may be: (1) historic in origin; (2) linked to a significant cultural resource; or (3) contain an exposed historic or prehistoric archaeological site within the roadbed or prism. Mitigation measures may need to be implemented to avoid causing harm to the roadbed itself or its associated cultural resources.

2005 Travel Rule and Executive Order 11644

As described briefly in chapter 1 and in detail in appendix A, criteria from the 2005 Travel Rule also apply to this project in addition to direction in the Forest Plan and the other laws and regulations listed in the section above. The 2005 Travel Rule (36 CFR Parts 212.55) mandates that certain criteria are considered when making decisions about the designations of roads, trails, and areas for motor vehicle use. The analysis presented in this EIS will assist the responsible official in considering: 1) '*effects on National Forest System natural and cultural resources, public safety, provision of recreational opportunities, access needs, conflicts among uses of National Forest System lands, the need for maintenance and administration of roads, trails, and areas that would arise if the uses under consideration are designated; and the availability of resources for that maintenance and administration*.' (36 CFR 212.55(a)) and 2) …*effects on the following, with the objective of minimizing: (1) Damage to soil, watershed, vegetation, and other forest resources; (2) Harassment of wildlife and significant disruption of wildlife habitats; (3) Conflicts between motor vehicle use and existing or proposed recreational uses of National Forest System lands or neighboring Federal lands; and (4) Conflicts among different classes of motor vehicle uses of National Forest System lands or neighboring Federal land*' (36 CFR 212.55(b)). These 'minimization criteria' were considered during the development of the alternatives, including the preferred alternative. Off-route motor vehicle use (except within 300 feet of designated routes for the purpose of dispersed camping has been prohibited in the planning area since 2001 with the signing of the OHV decision. All Blackfoot travel plan action alternatives would continue this prohibition on off-route motor vehicle use with the exception for use associated with dispersed camping within 300 feet of designated routes only, with certain resource protection provisions, as described in chapter 2.

Each interdisciplinary team specialist carefully considered this off-route motor vehicle use separate from motor vehicle use that would occur on designated routes under each alternative. Effects of this off-route use were a component of each resource analysis and are included in each resource specialist report and summarized in chapter 3 and table S-1.

Based on the analysis presented in chapter 3 and summarized in table S-1, adverse impacts from off-route motor vehicle use would be minimized with implementation of any of the action alternatives, more so with some alternatives than others. Best management practices and project design features would also be implemented for any action alternative selected, with the intent of avoiding or minimizing adverse impacts from all proposed actions, including off-route motor vehicle use.

Executive Order 11644 (Use of off-road vehicles on the public lands, 1972, as amended) established policies and provided for procedures to ensure that '*the use of off-road vehicles on public lands will be controlled and directed so as to protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands*. Specifically:

Sec. 3. Zones of Use*: (a) Each respective agency head shall develop and issue regulations and administrative instructions, within six months of the date of this order, to provide for administrative designation of the specific areas and trails on public lands on which the use of off-road vehicles may be permitted, and areas in which the use of off-road vehicles may not be permitted, and set a date by which such designation of all public lands shall be completed. Those regulations shall direct that the designation of such areas and trails will be based upon the protection of the resources of the public lands, promotion of the safety of all users of those lands, and minimization of conflicts among the various uses of those lands. The regulations shall further require that the designation of such areas and trails shall be in accordance with the following--*

(1) Areas and trails shall be located to minimize damage to soil, watershed, vegetation, or other resources of the public lands. (2) Areas and trails shall be located to minimize harassment of wildlife or significant disruption of wildlife habitats. (3) Areas and trails shall be located to minimize conflicts between off-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands, and to ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors. (4) Areas and trails shall not be located in officially designated Wilderness Areas or Primitive Areas. Areas and trails shall be located in areas of the National Park system, Natural Areas, or National Wildlife Refuges and Game Ranges only if the respective agency head determines that off-road vehicle use in such locations will not adversely affect their natural, aesthetic, or scenic values.

These criteria, like those provided in the 2005 Travel Rule were considered during the development of the alternatives, including the preferred alternative. Off-route motor vehicle use (except within 300 feet of designated routes for the purpose of dispersed camping) has been prohibited in the planning area since 2001 with the signing of the OHV decision. All Blackfoot travel plan action alternatives would continue this prohibition on off-route motor vehicle use except for within 300 feet of designated routes only for the purposes of dispersed camping and parking associated with camping. Each action alternative also includes resource protection measures for this use, as described in chapter 2.

Each interdisciplinary team specialist carefully considered this off-route motor vehicle use separate from motor vehicle use that would occur on designated routes under each alternative. Effects of this off-route use were a component of each resource analysis and are included in each resource specialist report and summarized in chapter 3 and table S-1.

Based on the analysis presented in chapter 3 and summarized in table S-1, adverse impacts from off-route motor vehicle use would be minimized with implementation of any of the action alternatives, more so with some alternatives than others. Best management practices and project design features would also be implemented for any action alternative selected, with the intent of avoiding or minimizing adverse impacts from all proposed actions, including off-route motor vehicle use. No new designated routes would occur in designated Wilderness Areas or Primitive Areas or in any areas of the National Park System, Natural Areas or National Wildlife Refuges or Game Ranges.

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Chapter 4. List of Preparers and Contributors

The Forest Service consulted the following individuals and federal, state, and local agencies, tribes and other organization and individuals during the development of this environmental impact statement:

Interdisciplinary Team Members

Name	Responsibility	Qualifications
USDA Forest Service, Helena National Forest		
Laura Burns, GIS Specialist	Geographic Information Systems	Bachelor of Science in Forest Resource Management; fisheries biologist for 17 years and a GIS specialist for 6 years
Elizabeth Casselli	Roadless Areas	AS in Horticulture; BS in Landscape Design; 27 years experience.
Autumn Coleman, Forest Soil Scientist	Hydrology	Bachelor of Science in Soil Science with an emphasis in land rehabilitation. Master of Science Candidate in Land Resources and Environmental Science. 13 years of experience.
Jason Gilbert, Supervisory Forestry Technician	Fire and Fuels	15 years of wildland firefighting experience
Pam Hergett, Engineer	Transportation	Bachelor of Science in Engineering; 26 years of experience in engineering and 1 year of experience in transportation planning
Beth Ihle, Geologist/Minerals Program Manager	Minerals	Bachelor of Science in Geology and a Master of Science in Earth Sciences; 25 years of experience
Tim Lahey, Planning Forester	Socioeconomics and Timber Management	Bachelor of Science in Forest Resource Management; 9 years of experience
Scott Johnson, Planning Forester	Socioeconomics and Timber Management	Bachelor of Science in Environmental Studies with an emphasis in law and policy. 9 years of experience.
Josh Lattin, Recreation Specialist	Recreation	Bachelor of Science in Forest Management from the University of Montana. Worked for the Nez Perce, Lolo and Lincoln NF.
Rebecca McNamara	Hydrology	Bachelor of Science in Land Resources and Environmental Sciences- Soil and Water emphasis Master of Science in Land Resources and Environmental Sciences- Water Resources emphasis 3 years of experience
Mike Mullin, Natural	Recreation	Bachelor of Science in

Name	Responsibility	Qualifications
USDA Forest Service, Helena National Forest		
Resource/Recreation Specialist		Environmental Science and Master of Science in Land Resources & Environmental Science; 11 years of experience
David Payne, Recreation Program Manager	Roadless Areas	Bachelor of Science in Resource Management; 34 years of experience
Denise Pengeroth, Forest Wildlife Biologist	Big Game Security Amendment	Bachelor of Science in Wildlife Biology; Master of Science in Wildlife Biology; 30 years of experience
Arian Randall, Deputy Forest Archaeologist	Heritage Resources	Bachelor of Science in Anthropology; Master of Science Candidate in Land Resources and Environmental Science; 6 years of experience
Sharon Scott	Socioeconomics and Timber Management	
Pat Shanley, District Wildlife Biologist	Terrestrial Wildlife Biology	Bachelor of Science in Wildlife Management; 25 years of experience.
Keith Stockman, Regional Economist	Socioeconomics	Degrees in Economics (BA), Environmental Studies (MS) and Applied Wildland Economics (PhD Forestry); 16 years of experience.
Ann Sullivan	Geographic Information Systems	18 years of experience
Jaime Tompkins, NEPA Planner	NEPA Review	Bachelor of Science in Recreation Resource Management from the U of M School of Forestry; 23 years of experience
USDA Forest Service, TEAMS Enterprise Unit		
Matt Boisseau, Landscape Architect	Scenery	Bachelor of Science in Recreation and Master of Science in Landscape Architecture; 13 years of experience
Kat Carsey, Botanist	Invasive Plants and Threatened, Endangered and Sensitive Plants	Master of Science in Biology; 21 years of experience
Nicole Hill, Landscape Architect	Scenery	Bachelor of Science in Landscape Design and Environmental Management; 13 years of experience
Debbie McGlothlin, Environmental Coordinator	Interdisciplinary Team Leader	Bachelor of Science in Biology and Master of Science in Environmental Resource Management; 23 years of experience
Michael McNamara, Soil Scientist	Soils	Bachelor of Science in Geology and Master of Science in Forest Hydrology; 25 years of experience

Name	Responsibility	Qualifications
USDA Forest Service, Helena National Forest		
Janet Moser	Terrestrial Wildlife	Bachelor of Science in Wildlife Resources; 30 years of experience
Amee Rief, Fisheries Biologist	Fisheries and Aquatic Resources	Bachelor of Science in Biology and Master of Science in Fisheries and Wildlife Science, 18 years of experience
Janice Schultz	Writer-Editor	20 years of experience with the Forest Service in silviculture, recreation and public affairs, 12 years in NEPA documentation

Federal, State, and Local Agencies

Broadwater County Commission
Bonneville Power Administration
Central Land Office
Fort Belknap Community Council
Helena Chamber of Commerce
Lewis and Clark County
Lewis and Clark, Board of County Commissioners
Lincoln Chamber of Commerce
Lincoln Valley Chamber of Commerce
Meagher County Little Belters
Montana Department of Environmental Quality
Montana Department of Natural Resources and Conservation
Montana Fish, Wildlife and Parks
Montana Historical Society
Montana Independent Living Project
Montana State Historic Preservation Officer
Natural Resources Conservation Service
Powell County Commissioners
U.S. Army Corps of Engineers
U.S. Environmental Protection Agency
USDA FS Rocky Mountain Regional Office
USDA Lewis and Clark NF
USDI Bureau of Land Management
USDI Fish and Wildlife Service

Tribes

Blackfeet Tribal Business Council
Blackfeet THPO

Chippewa Cree Tribe of Rocky Boy’s
Chippewa Cree THPO
Little Shell Tribe of Chippewa
Crow THPO
Crow Tribal Council
Crow Preservation Director, Crow Agency
Fort Peck Tribal Executive Board
Fort Peck THPO
Nez Perce THPO
Nez Perce Tribe Executive Committee
Northern Cheyenne Tribal Council
Northern Cheyenne THPO
Salish & Kootenai Tribal Council
Francis Auld, Acting THPO, Tribal Preservation Department, Salish & Kootenai Tribe
Shoshone-Bannock Tribes
Wind River-Eastern Shoshone
Eastern Shoshone THPO
Northern Arapahoe Business Council
Northern Arapahoe THPO

Others

Ag in the Classroom
ATNA Resources/CR Montana
American Sportfishing Association
American Wildlands
Back Country Horsemen of Montana
Badger-Two Medicine Committee
Bitterroot Grizzly Motorcycle Alliance
Blue Ribbon Coalition
Boone and Crockett Club
Capital Trail Vehicle Association
Citizens for Balanced Youth
Congressional Sportsman’s Foundation
Continental Divide Trail Alliance
Continental Divide Trail Society
Capital Trail Vehicle Association/ Montana Vehicle Riders Association /National Off-Highway Vehicle Conservation Council
CU Task Force
Defenders of Wildlife
Earth Justice
Friends of the West
Friends of the Wild Swan

Foundation for North American Wild Sheep
Great Divide Cycling Club
Great Falls Trail Bike Riders Association
Helena Climbing Association
Helena Hunters and Anglers Association
Helena Snowdrifters
Helena Trail Riders
International Association of Fish and Wildlife Agencies
Keystone Conservation
Last Chance Audubon Society
Last Change Back Country Horseman
Montana Environmental Info Center
Montana Land Reliance
Montana Mountain Bike Alliance
Montana Multiple Use Association
Montana Snowmobile Association
Montana Trappers Association
Montana Vehicle Riders Association
Montana Wilderness Association
Montana Wilderness Society
Montana Wool Growers Association
National Rifle Association
National Shooting Sports Foundation
National Wild Turkey Federation
Native Ecosystems Council
PLWA
Ponderosa Snow Warriors
Prickly Pear Land Trust
Prickly Pear Sportsman’s Association
Public Lands Foundation
Recreational Boating and Fishing
Roberts Racing
Russell Country Sportsman's Association
SCI – First for Hunters
Spokane 4 Wheelers
Southwest Montana Wildlands Alliance
The Wilderness Society
Theodore Roosevelt Conservation
Tri County Fire Working Group
Trout Unlimited
United Four Wheel Drive Association

Western Montana RAC
Wild Divide Chapter of MWA
Wildlands CPR
Winter Wildlands Alliance

Distribution of the Final Environmental Impact Statement

This environmental impact statement has been distributed to individuals who specifically requested a copy of the document, those who commented on the draft EIS in 2013, other applicable federal agencies, federally recognized tribes, State and local governments, and organizations representing a wide range of views. It has also been posted to the Helena National Forest website. The distribution list for the FEIS is available in the project record.

References

The following references were used in the preparation of this document and in associated resource reports in the project record.

Chapters 1 and 2

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Glossary

Access: Usually refers to a road or trail route over which a public agency claims a right-of-way available for public use.

Activity: A measure, course of action, or treatment that is undertaken to directly or indirectly produce, enhance, or maintain forest and range land outputs or achieve administrative or environmental quality objectives.

Administrative Boundary: Includes Helena National Forest System lands and all other land ownerships within the Forest boundary as defined on the Forest Visitor map (see project file)

Administrative Use: Motorized vehicle use associated with management activities or projects on National Forest land administered by the Forest Service or under authorization of the Forest Service. Management activities include but are not limited to: law enforcement, timber harvest, reforestation, cultural treatments, prescribed fire, watershed restoration, wildlife and fish habitat improvement, private land access, allotment management activities, and mineral exploration and development that occur on National Forest land administered by the Forest Service or under authorization of the Forest Service.

Affected Environment: The biological, physical and human environment that may be changed by the proposed activities.

All-terrain Vehicle (ATV): A type of off-highway vehicle that travels on three or more low-pressure tires; has handle-bar steering; is less than or equal to 50 inches in width; and has a seat designed to be straddled by the operator (FSH 2309.1805).

Alternative: One of several policies, plans, or projects proposed for decisionmaking.

Anadromous Fish: Fish, such as salmon, that spend much of their adult life in the ocean, returning to inland waters to spawn.

Aquatic Ecosystem: A stream channel, lake, or estuary bed, the water itself, and the biotic communities that occur therein.

Arterial Road: A National Forest System (NFS) road that provides service to large land areas and usually connects with other arterial roads or public highways. These roads are generally maintenance level 4 or 5.

Best Management Practices (BMPs): The set of standards in the Forest Plan which, when applied during implementation of a project, ensures that water related beneficial uses are protected and that State water quality standards are met. BMPs can take several forms. Some are defined by State regulation or memoranda of understanding between the Forest Service and the States. Others are defined by the Forest interdisciplinary planning team for application Forestwide. Both of these kinds of BMPs are included in the Forest Plan as forestwide standards. A third kind is identified by the interdisciplinary team for application to specific management areas. A fourth kind, project-level BMPs, is based on site-specific evaluation, and represents the most effective and practicable means of accomplishing the water quality and other goals of the specific area involved in the project. These project-level BMPs can either supplement or replace the Forest Plan standards for specific projects.

Big Game: Those species of large mammals normally managed as a sport hunting resource.

Big Game Summer Range: Land used by big game during the summer months.

Big Game Winter Range: The area available to and used by big game through the winter season.

Browse: Twigs, leaves, and young shoots of trees and shrubs on which animals feed; in particular, those shrubs that are utilized by big game animals for food.

Capability: The potential of an area of land and/or water to produce resources, supply goods and services, and allow resource uses under a specified set of management practices and at a given level of management intensity. Capability depends upon current conditions and site conditions such as climate, slope, landform, practices such as silviculture, or protection from fires, insects, and disease.

Cavity: A hollow in a tree that is used by birds or mammals for roosting and reproduction.

Council on Environmental Quality (CEQ): An advisory council to the President established by the National Environmental Policy Act of 1969. It reviews Federal programs for their effect on the environment, conducts environmental studies, and advises the President on environmental matters.

Channel Morphology: The channel pattern and geometry at several points along a river channel, including the network of tributaries within the drainage basin. Also known as fluviomorphology; stream morphology.

Closed Roads: Roads developed and operated for limited use. Public vehicular traffic is restricted except when they are operating under a permit or contract or in an emergency.

Closure Order: The administrative order that does not allow specified uses in designated areas or on Forest development roads or trails.

Collector Road: A NFS road that serves smaller areas than an arterial road and that usually connects arterial roads to local roads or terminal facilities; provides service to smaller land areas than an arterial road. These roads are generally maintenance level 3, but can be level 2 or 4.

Comprehensive Environmental Cleanup and Responsibility Act (CECRA): In Montana, this Act requires investigation and cleanup of hazardous substances at sites not addressed by federal Superfund. According to the Montana Department of Environmental Quality, historical waste disposal activities at these sites caused contamination of air, surface water, groundwater, sediments, and/or soils with hazardous or deleterious substances. Under CECRA in Montana, sites are ranked based on potential risks to human health and the environment. The Comprehensive Environmental Cleanup and Responsibility Act (CECRA) defines "Facility" as all areas where a hazardous or deleterious substance has been deposited, stored, disposed of, placed, or otherwise come to be located (§75-10-701(4), MCA). The act is contained in §§ 75-10-705 through 729, MCA.

Corridor: A linear strip of land identified for the present or future location of transportation or utility rights-of-way within its borders.

Cost: The negative or adverse effects or expenditures resulting from an action. Costs may be monetary, social, physical, or environmental in nature.

Cover: Vegetation used by wildlife for protection from predators, or to protect themselves from weather conditions, or in which to reproduce.

Critical Habitat: Specific areas within the geographic area occupied by a species on which are found those physical and biological features (1) essential to the conservation of the species and (2) which may require special management considerations or protection. Critical habitat does not include the entire geographic area which may be occupied by a threatened or endangered species.

Cultural Resources: The physical remains of human activities, such as artifacts, ruins, burial mounds, petroglyphs, etc., and the conceptual content or context, such as a setting for legendary, historic, or prehistoric events as a sacred area of native peoples, etc., of an area.

Cumulative Effect: The impact on the environment that results from the incremental impact of the action when added to other actions. Cumulative impacts can also result from individually minor but collectively significant actions taking place over a period of time.

Decommission: Decommissioning a road means physically deconstructing it and/or administratively removing it from the Forest transportation system. It can be accomplished with actual on-the-ground road work, or it can be accomplished with just an administrative change to the road's status on the transportation system. On-the-ground road work may entail one or more of the following to prevent future failures and erosion hazards: full or partial recontouring of the road prism, ripping or subsoiling the road surface, removing culverts and recontouring stream crossings, and planting and seeding, mulching, or slashing disturbed areas. If no hydrologic problems or risks of mass failure are present, and/or the road is grown in to the point that use is not possible, decommissioning may entail barricading the road to restrict motorized access and removing its status as a classified road from the transportation system. In some cases, a barrier may not even be necessary.

Designated Road, Trail or Area: A National Forest System (NFS) road, a NFS trail, or an area on NFS lands that is designated for motor vehicle use pursuant to 36 CFR §212.51 on a motor vehicle use map (36 CFR 212.1).

Desired Future Condition (DFC): Desired Future Condition; a desired condition of the land to be achieved sometime in the future.

Developed Recreation: Recreation that occurs where improvements enhance recreation opportunities and accommodate intensive recreation activities in a defined area.

Direct Effects: Effects on the environment that occur at the same time and place as the initial cause or action.

Dispersed Recreation: That portion of outdoor recreation use that occurs outside of developed sites in the unroaded and roaded Forest environment; i.e., hunting, backpacking, and berry picking.

Disturbance: Any management activity that has the potential to accelerate erosion or mass movement; also any other activity that may tend to disrupt the normal movement or habits of a particular wildlife species. At the landscape scale, a disturbance would be a force, such as wildfire, disease, or large-scale vegetation management, which can significantly alter existing ecosystem conditions.

Draft Environmental Impact Statement (DEIS): A draft version of an environmental impact statement prepared for public review and comment, prior to development of a final environmental impact statement. See Environmental Impact Statement.

Economic Efficiency: The usefulness of inputs (costs) to produce outputs (benefits) and effects when all costs and benefits that can be identified and valued are included in the computations. Economic efficiency is usually measured using present net value, though use of benefit cost ratios and rates of return may sometimes be appropriate.

Ecosystem: A complete, interacting system of organisms considered together with their environment; a marsh, watershed, or lake, for example.

Effects (or Impacts): Physical, biological, social, and economic results (expected or experienced) resulting from natural events or management activities. Effects can be direct, indirect, and/or cumulative.

Elk Habitat Effectiveness: The measure of how open roads affect utilization of habitat by elk.

Elk Hiding Cover: Vegetation, primarily trees, capable of hiding 90 percent of an elk seen from a distance of 200 feet or less.

Elk Security Area: An area elk retreat to for safety when disturbance in their usual range is intensified, such as by logging activities or during the hunting season. To qualify as a security area, there must be at least 250 contiguous acres that are more than 0.50 mile from open roads.

Endangered Species: Any species that is in danger of extinction throughout all or a significant portion of its range, and listed as such by the Secretary of the Interior in accordance with the Endangered Species Act of 1973.

Endemic: Term applied to populations of potentially injurious plants, animals, or viruses that are at their normal, balanced, level, in an ecosystem in contrast to epidemic levels. Plant and animal diseases that are prevalent in or peculiar to a certain locality.

Environmental Analysis: An analysis of alternative actions and their predictable short- and long-term environmental effects, which include physical, biological, economic, social, and environmental design factors and their interactions.

Environmental Assessment: A concise public document for which a Federal agency is responsible that serves to: (1) briefly provide sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement or a Finding of No Significant Impact; (2) aid an agency's compliance with the National Environmental policy Act when no Environmental Impact Statement is necessary; and (3) facilitate preparation of an environmental impact statement when one is necessary.

Environmental Impact Statement (EIS): A document required by the National Environmental Policy Act (NEPA) for certain actions "significantly affecting the quality of the human environment." An EIS is a tool for decisionmaking. It describes the positive and negative environmental effects of a proposed action, and it usually also lists one or more alternative actions that may be chosen instead of the action described in the EIS.

Ephemeral Stream: Streams that flow only as a direct response to rainfall or snowmelt events; they have no base flow.

Erosion: The wearing away of the land's surface by water, wind, ice, or other physical processes. It includes detachment, transport, and deposition of soil or rock fragments.

Essential Habitat: Areas with essentially the same characteristics as critical habitat but not declared as such. These habitats are necessary to meet recovery objectives for endangered, threatened, and proposed species.

Final Environmental Impact Statement (Final EIS): The final version of the public document required by the National Environmental Policy Act (see Environmental Impact Statement).

Floodplain: Lowland and relatively flat areas joining streams, rivers, and lakes, which are periodically inundated by overbank flows of water.

Forage: All browse and nonwoody plants available to livestock or wildlife for feed.

Foreground (Visual Distance Zone): A term used in visual management to describe the area immediately adjacent to the observer, usually within 1/4 to 1/2 mile.

Forest Plan: Also referred to as land and resource management plans, forest plans are guidance documents for units of the National Forest System under the Forest and Rangeland Renewable Resources Planning Act of 1974 (P.L. 93-378) and the National Forest Management Act (P.L. 94-588). The Acts specify a detailed process and numerous requirements, including public participation and periodic revision, intended to achieve multiple use and sustained yield of the national forests.

Forest and Rangeland Renewable Resources Planning Act of 1974: An act of Congress that requires the assessment of the nation's renewable resources and the periodic development of a national renewable resources program. It also requires the development, maintenance and, as appropriate, revision of land and resource management plans for National Forests.

Forest Road or Trail: A road or trail wholly or partly within or adjacent to and serving the NFS that the Forest Service determines is necessary for the protection, administration, and utilization of the NFS and the use and development of its resources (36 CFR 212.1).

Forest Transportation System: The system of NFS roads, NFS trails, and airfields on NFS lands (36 CFR 212.1).

Forest Transportation System Management: Travel planning, analysis, designation of roads, trails and areas for motor vehicle use, recordkeeping, scheduling, construction, reconstruction, maintenance, decommissioning, and other operations undertaken to achieve environmentally sound, safe, and cost-effective access for the use, enjoyment, protection, administration, and management of NFS lands.

Fuels: Includes living plants and dead, woody vegetation that are capable of burning.

Fuels Management: Manipulation or reduction of fuels to meet Forest protection and management objectives while preserving and enhancing environmental quality.

Geographic Information System (GIS): A computer program for manipulating landscape configuration data.

Habitat: A place where a plant or animal naturally or normally lives and grows.

Habitat Type: An aggregation of all land areas potentially capable of producing similar plant communities at climax.

Hiding Cover: Trees of sufficient size and density to conceal animals from view at 200 feet. See Cover.

Highway-legal Vehicle: Any motor vehicle that is licensed or certified under State law for general operation on all public roads in the State (FSM 7705). Operators of highway-legal vehicles are subject to State traffic law, including requirements for operator licensing.

Hydrologic Recovery: The process of revegetation of a disturbed area which returns the site to predisturbance levels of water runoff and timing of flow.

Indicator Species: Species identified in a planning process that are used to monitor the effects of planned management activities on viable populations of wildlife and fish, including those that are socially or economically important. See Management Indicator Species.

Indigenous: Having originated in and being produced, growing, living, or occurring naturally in a particular region or environment.

Indirect Effects: Indirect effects are caused by the action and occur later in time or further removed in distance, but are still reasonably foreseeable.

INFRA (Infrastructure Database): The database of record for Forest Service roads and trails.

Interdisciplinary Team (ID Team): A group of individuals with different training assembled to solve a problem or perform a task. The team is assembled out of recognition that no one scientific discipline is sufficiently broad to adequately solve the problem. Through interaction, participants bring different points of view to bear on the problem.

Intermittent Stream: A stream that flows at certain times of the year when it receives water from springs or from some surface water source such as melting snow.

Invasive Species: Any nonnative plant, which when established, is or may become destructive and difficult to control by ordinary means of cultivation or other control practices.

Inventoried Roadless Area: An area that is larger than 5,000 acres, or if smaller than 5,000 acres, contiguous to a designated wilderness or primitive area; meets the minimum criteria for wilderness consideration under the Wilderness Act; and has been inventoried for possible inclusion to the wilderness preservation system.

Irretrievable: Foregone or lost production, harvest, or use of renewable natural resources. For example, when fire destroys a tree plantation, the effect is irretrievable but the loss of site productivity as measured by the presence of trees is not irreversible.

Irreversible: The removal of resources such that they cannot be produced gain. This applies most commonly to nonrenewable resources such as minerals or cultural resources, or to resources such as soil productivity that are renewable only over long periods of time. Loss of renewable resources can also be irreversible as in the replacement of a forest with a road.

Issue: A subject or question of widespread public discussion or interest regarding management of National Forest System lands.

Local Road: A NFS road that connects a terminal facility with collector roads, arterial roads, or public highways and that usually serves a single purpose involving intermittent use. These roads are usually maintenance level 1 or 2.

Long-term Effects: Those effects which generally occur after the maximum 15 year life of the Forest Plan.

Maintenance Level: Maintenance levels define the level of service provided by, and maintenance required for, a specific road.

Maintenance Level 1: Intermittent service roads during the time they are closed to vehicular traffic. The closure period must exceed 1 year. Basic custodial maintenance is performed to keep damage to adjacent resources to an acceptable level and to perpetuate the road to facilitate future management activities. Emphasis is normally given to maintaining drainage facilities and runoff patterns.

Maintenance Level 2: Roads open for use by high-clearance vehicles. Passenger car traffic is not a consideration. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted, dispersed recreation, or other specialized uses.

Maintenance Level 3: Roads open and maintained for travel by prudent drivers in a standard passenger car. User comfort and convenience are low priorities. Roads in this maintenance level are typically low speed, single lane with turnouts, and spot surfacing. Some roads may be fully surfaced with either native or processed material.

Maintenance Level 4: Roads that provide a moderate degree of user comfort and convenience at moderate travel speeds. Most roads are double lane and aggregate surfaced. However, some roads may be single lane. Some roads may be paved and/or dust abated.

Maintenance Level 5: Roads that provide a high degree of user comfort and convenience. These roads are normally double-lane, paved facilities. Some may be aggregate surfaced and dust abated.

Management Area: An aggregation of capability areas that have common management direction and may be noncontiguous in the forest. Consists of a grouping of capability areas selected through evaluation procedures and used to locate decisions and resolve issues and concerns.

Middleground (Visual Distance Zone): That part of the seen landscape that extends from 1/4 to 1/2 mile, to 3 to 5 miles, from the observer.

Mitigation: Avoiding or minimizing impacts by limiting the degree or magnitude of the action and its implementation; rectifying the impact by repairing, rehabilitating, or restoring the affected environment; reducing or eliminating the impact by preservation and maintenance operations during the life of the action.

Management Indicator Species: A plant or animal that, by its presence in a certain location or situation, indicates the habitat conditions for many other species.

Modification: A visual quality objective in which management activities may visually dominate, but harmonize with, the original characteristics landscape. Under maximum modification, human activity may dominate the characteristic landscape, but should appear as a natural occurrence when viewed as background.

Monitoring: An examination, on a sample basis of Forest Plan management practices, to determine how well objectives have been met and a determination of the effects of those management practices on the land and environment.

Motor Vehicle: Any vehicle that is self-propelled, other than:

(1) A vehicle operated on rails; and

(2) Any wheelchair or mobility device, including one that is battery-powered, that is designed solely for use by a mobility-impaired person for locomotion, and that is suitable for use in an indoor pedestrian area (36 CFR 212.1).

Motor Vehicle Use Map (MVUM): A map reflecting designated roads, trails, and areas on an administrative unit or a ranger district of the National Forest System (36 CFR 212.1). The MVUM clearly identifies roads and trails and their designated motorized uses for forest visitors.

Motorcycle: A two-wheeled motor vehicle on which the two wheels are not side-by-side but in line.

Motorized Mixed Use: Designation of a National Forest System road for use by both highway-legal and non-highway-legal motor vehicles (FSM 7705).

National Environmental Policy Act; NEPA Process: National Environmental Policy Act. An act to declare a national policy that will encourage productive and enjoyable harmony between man and his environment, to promote efforts that will prevent or eliminate damage to the environment and biosphere, and stimulate the health and welfare of man, to enrich the understanding of the ecological systems and natural resources important to the nation, and to establish a Council on Environmental Quality. An interdisciplinary process, mandated by the National Environmental Policy Act, which concentrates decisionmaking around issues, concerns, alternatives, and the effects of alternatives on the environment.

National Forest Management Act: A law passed in 1976 as amendments to the Forest and Rangeland Renewable Resources Planning Act that require the preparation of Regional and Forest plans and the preparation of regulations to guide that development.

National Forest System (NFS): All National Forest lands reserved or withdrawn from the public domains of the United States; all National Forest lands acquired through purchase, exchange, donation, or other means; the National Grasslands and land utilization projects administered under Title III of the Bankhead-Jones Farm Tenant Act (50 Stat. 525, 7 U.S.C. 1010-1012); and other lands, waters, or interests therein which are administered by the Forest Service or are designated for administration through the Forest Service as part of the system.

National Forest System Road: A forest road other than a road which has been authorized by a legally documented right-of-way held by a state, county, or local public road authority (36 CFR 212.1).

National Forest System Trail: A forest trail other than a trail which has been authorized by a legally documented right-of-way held by a state, county, or local public road authority (36 CFR 212.1).

National Recreation Trails: Trails designated by the Secretary of the Interior or the Secretary of Agriculture as part of the national system of trails authorized by the National Trails System Act. National recreation trails provide a variety of outdoor recreation uses in or reasonably accessible to urban areas.

National Register of Historic Places: A listing maintained by the National Park Service of areas that have been designated as being of historical value. The Register includes places of local and State significance as well as those of value to the nation as a whole.

Native Surface Road: A road whose surface is composed of soil, rock or other naturally occurring materials found on or near the road (FSH 2309.18.05(a)(1).

Natural Sediment Production: The amount of sediment produced in a watershed prior to any management activities such as roads or harvest. Natural, or baseline, sediment is a function of parent material, soil type, degree of weathering, glacial influences, etc.

No-Action Alternative: An alternative where no management activities would occur beyond those currently underway. The development of a no-action alternative is requested by regulations implementing the National Environmental Policy Act (40 CFR 1502.14). The no-action alternative provides a baseline for estimating the effects of other alternatives.

Non-Highway-Legal Vehicle: Any motor vehicle that is not licensed or certified under state law for general operation on all public roads within the state. Operators of non-highway-legal vehicles are subject to state requirements, if any, for licensing and operation of the vehicle in question.

Non-Motorized Area: Any area of National Forest not designated for motor vehicle use and beyond the specified distance from certain designated routes for motor vehicle access to dispersed camp sites (adapted from 36 CFR 212.51(b)

Objective: A specified statement of measurable results to be achieved within a stated time period. Objectives reflect alternative mixes of all outputs of achievements which can be attained at a given budget level. Objectives may be expressed as a range of outputs.

Off-Highway Vehicle: Any motor vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain (36 CFR 212.1). Includes 4 wheel drive trucks, ATVs, UTVs, and over-snow vehicles

Operator: Any person who is in physical control of a motorbike, all-terrain vehicle, or over-snow vehicle.

Off-Road Vehicle; ORV: Please see Off-highway Vehicle.

Outfitters and Guides: An outfitter is an individual or legal entity that is licensed by the appropriate state as an outfitter. Outfitting includes the provision of equipment, supplies, livestock, and materials. Guiding includes the provision of assistance such as supervision, protection, education, training, transportation, interpretation, and guiding services. It includes such personal services as leading, teaching, cooking, packing, or otherwise assisting recreationists in their pursuit of a natural resource based outdoor recreation experience.

Owner: Every person holding record title to a motorbike, all-terrain vehicle, or over-snow vehicle and entitled to the use or possession thereof, other than a lienholder or other person having a security interest only.

Perennial Stream: A stream that normally flows throughout the year.

Prescription: Management practices selected and scheduled for application on a designated area to attain specific goals and objectives.

Primitive: Very high probability of experiencing solitude, freedom, closeness to nature, tranquility, self-reliance, challenge, and risk. An unmodified and natural environment prevails, with low interaction between users. Restrictions and controls are not evident after entry into the area, and access and travel is non- motorized. There is no evidence of vegetation alteration.

Private Road: A road under private ownership authorized by an easement granted to a private party or a road that provides access pursuant to a reserved or outstanding right.

Productivity: See Site Productivity

Proposed Action: In terms of the National Environmental Policy Act, the project, activity, or action that a Federal agency intends to implement or undertake and which is the subject of an environmental analysis.

Public Road: A road under the jurisdiction of and maintained by a public road authority and open to public travel (23 U.S.C. 101(a))

Public Access: Usually refers to a road or trail route over which a public agency claims a right-of-way available for public use.

Public Involvement: A Forest Service process designed to broaden the information based upon which agency decisions are made by (1) informing the public about Forest Service activities, plans, and decisions, and (2) encouraging public understanding about and participation in the planning processes that lead to final decisionmaking.

Public Roadway: All portions of any highway that are controlled by an authority other than the Idaho Transportation Department.

Range Allotment: A designated area of land available for livestock grazing upon which a specified number and kind of livestock may be grazed under a range allotment management plan. It is the basic land unit used to facilitate management of the range resource on National Forest System and associated lands administered by the Forest Service.

Ranger District: Administrative subdivision of a national forest supervised by a district ranger.

Record of Decision: A document separate from but associated with an environmental impact statement that publicly and officially discloses the responsible official's decision about an alternative assessed in the environmental impact statement chosen for implementation.

Recreation Opportunity Spectrum (ROS): The framework for stratifying and defining classes of outdoor recreation environments, activities, and experiences, which are arranged along a continuum or spectrum that is divided into seven classes: primitive, semiprimitive nonmotorized, semiprimitive motorized, roaded modified, roaded natural, rural, and urban.

Recreation Visitor Day: Recreational use of National Forest developed sites or general forest areas that equals 12 visitor hours. A Recreation Visitor Day (RVD) may consist of 1 person for 12 hours, 12 persons for 1 hour, or any equivalent combination of continuous or intermittent recreation use by individuals or groups. One person in a campground for 24 hours equals two RVDs.

Regional Guide: A document developed to meet the requirements of the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA), as amended, that guides all natural resource management activities and established management standards and guidelines for National Forest System lands of a given Region to the national forest within a given Forest Service region. It also disaggregates the RPA objectives assigned to the region to the Forests within that Region.

Revegetation: The reestablishment and development of plant cover. This may take place naturally through the reproductive processes of the existing flora or artificially through the direct action of man, such as reforestation or range reseeding.

Right-of-Way: Land authorized to be used or occupied for the construction operation, maintenance, and termination of a project facility passing over, upon, under, or through such land.

Riparian Areas: Areas with distinctive resource values and characteristics that are comprised of aquatic and riparian ecosystems, 100-year floodplains and wetlands. They also include all upland areas within a horizontal distance of approximately 100 feet from the edge of perennial streams or other perennial waterbodies.

Road: A motor vehicle route over 50 inches wide, unless identified and managed as a trail (36 CFR 212.1).

Road Decommissioning: Activities that result in restoration of unneeded roads to a more natural state (FSM 7734).

Road Maintenance: Ongoing upkeep of a road necessary to maintain or restore the road in accordance with its road management objectives (FSM 7714).

Road Management: The combination of traffic and maintenance management operations. Traffic management is the continuous process of analyzing, controlling, and regulating uses to accomplish National Forest objectives. Maintenance management is the perpetuation of the transportation facility to serve intended management objectives.

Roaded Natural (ROS class): The opportunity to affiliate with other users in developed sites is available with some chance for privacy. Self-reliance on outdoor skills is only moderately important, and there is little challenge or risk. The area is a mostly natural-appearing environment as viewed from sensitive roads and trails. Interaction between users at campsites is of moderate importance. There are some obvious on-site controls of users, access and travel is conventional motorized including sedans and trailers, recreational vehicles, and some motor homes. Vegetation alterations are done to maintain desired visual and recreation characteristics.

Route: A road or trail (FSM 7705)

Rural: (ROS class): These areas are characterized by recreation sites that can be used by large numbers of people at one time. High quality and quantity recreation use characterize these areas. While natural conditions usually do not dominate the activity centers, scenic values are often a critical element of the landscape as seen from the middleground and background from such areas. Facilities are designed for user comfort to accommodate large groups, and are surrounded by highly intense motorized use and organized parking. Generally, transportation routes consisting of State and Forest Service paved routes are the primary means of recreational user access within the area. Trails may be surfaced in areas of concentrated use. There may be areas, trails or roads within this ROS class where motorized use is prohibited or restricted to enhance recreation experiences or to protect public safety or resources

Scoping: The procedures by which the Forest Service determines the extent of analysis necessary for a proposed action, such as the range of actions, alternatives, and impacts to be addressed, identification of significant issues related to a proposed action, and the depth of environmental analysis, data, and task assignments needed.

Security Area: Any area that, because of its geography, topography, and/or vegetation, will hold elk during periods of stress. For this project, a security area is defined as a block of dense forested cover at least 250 acres in size and located at least 0.50 mile from roads open to motorized traffic during the general hunting season.

Sediment: Any material, carried in suspension by water, which will ultimately settle to the bottom of streams.

Semiprimitive Motorized (ROS class): There is a moderate opportunity for solitude, tranquility, and closeness to nature. There is a high degree of self-reliance, challenge, and risk in using motorized equipment. The area is predominantly natural-appearing, and there is a low concentration of users, but often evidence of other users on the trails. There are minimum site controls, and restrictions are present but subtle. Vegetation alterations are very small in size and number widely dispersed and not obvious.

Semiprimitive Nonmotorized (ROS class): There is a high quality of experiencing solitude, closeness to nature, tranquility, self-reliance, challenge, and risk. It is a natural-appearing environment with low interaction between users. There are a minimum of on-site controls, and access and travel are nonmotorized. Vegetation alterations are widely dispersed and not obvious.

Sensitive Species: Plant or animal species designated by the regional forester of the Forest Service, for which viability is a concern.

Site Productivity: The production capability of specific areas of land.

Soil Productivity: The capacity of a soil to produce a specific crop such as fiber and forage, under defined levels of management. It is generally dependent on available soil moisture and nutrients and length of growing season.

Standard: An objective requiring a specific level of attainment; a rule to measure against; a guiding principle.

System Road; Forest System Road: A road that is part of the Forest development transportation system, which includes all existing and planned roads, as well as other special and terminal facilities designated as Forest development transportation facilities.

Temporary Road or Trail: A road or trail necessary for emergency operations or authorized by contract, permit, lease, or other written authorization that is not a forest road or a forest trail and that is not included in a forest transportation atlas (36 CFR 212.1)

Thermal Cover: Cover used by animals to ameliorate effects of weather; for elk, a stand of coniferous trees 40 feet or taller with an average crown closure of 70 percent or more.

Threatened Species: Any species that is likely to become an endangered species within the foreseeable future throughout all of a significant portion of its range and one that has been designated as a threatened species in the Federal Register by the Secretary of the Interior.

Total Maximum Daily Load (TMDL): The Montana Water Quality Act requires the Department of Environmental Quality to develop Total Maximum Daily Loads (TMDLs) for streams and lakes that do not meet, or are not expected to meet, Montana Water Quality Standards. A TMDL is the maximum amount of a pollutant a water body can receive and still meet water quality standards. The goal of TMDLs is to eventually attain and maintain water quality standards in all of Montana’s streams and lakes, and to improve water quality to levels that support all state-designated beneficial water uses.

Trail: A route 50 inches or less in width or a route over 50 inches wide that is identified and managed as a trail (36 CFR 212.1).

Trailhead: The parking, signing, and other facilities available at terminus of a trail.

Unclassified Routes: A road or trail that is not a forest road or trail or a temporary road or trail and is not included in a forest transportation atlas (36 CFR 212.1). This includes user-created routes.

User-created Routes: Any route currently not managed as a component of the forest transportation system. These include off-road vehicle tracks that have not been designated and managed as a trail. They also include travelways abandoned from the forest transportation system, which still exist on the ground and continue to receive use by the public. For this project, user-created route and unclassified route are used interchangeably.

Visual Quality Objectives (VQOs): The degree of acceptable alteration of the characteristic landscape. VQOs provide direction for visual resources to determine the level of acceptable change for the landscape and are established in the Forest Plan. VQOs are used to determine if alternatives meet Forest Plan standards and guidelines by comparing the degree of alterations from an otherwise natural-appearing forest landscape. The Helena National Forest Land and Resource Management Plan and Agriculture Handbook Number 462 provide definitions for the VQOs used for the visual management of lands administered by the Lincoln Ranger District.

Visual Resource: The composite of basic terrain, geologic features, water features, vegetative patterns, and land use effects that typify a land unit and influence the visual appeal the unit may have for visitors.

Watershed: The total area above a given point on a stream that contributes water to the flow at that point.

Wilderness Character: Wilderness character attributes are: natural integrity, apparent naturalness, outstanding opportunities for solitude, and opportunities for primitive, unconfined recreation. These features were evaluated using capability analyses as conducted in 1978 using the Wilderness Attribute Rating (WAR) System and in 2005 using the Area Capability Assessment (ACA) Process. These analysis techniques rate wilderness character attributes as identified by the 1964 Wilderness Act.

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